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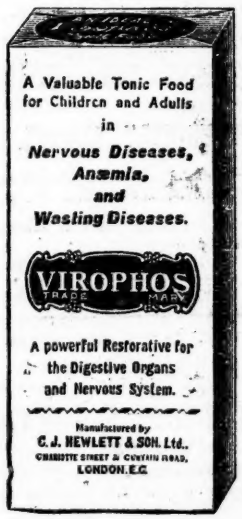
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A Lecture
ON
SOME FEATURES OF GUNSHOT WOUNDS OF THE CHEST.

BY J. F. DOBSON, M.S., F.R.C.S.,
LIEUT.-COLONEL R.A.M.C.(T.),
SURGEON TO THE LEEDS GENERAL INFIRMARY, ETC.

THE recognition of penetrating wounds of the chest is not always easy, and the most careful examination of the chest should be made in wounds of the upper arm, neck, shoulder, and lumbar regions. The following case is very instructive in this respect:

CASE I.—*Wound in Deltoid Region (Arm raised): Penetrating Wound of Chest: Haemothorax: Aspiration: Recovery.*
On July 31st, 1917, Pte. G. M. was sitting in a railway carriage when a shell fell close to the train, and he felt he had been hit in the arm. He was helped out of the train, walked with assistance about 100 yards, and then sat on a form for some time. He had a little pain in the chest, and could not take a deep breath. There was no haemoptysis. The wound in the arm appeared to be trivial, and a dressing was applied.
He was sent on to hospital about fifteen miles by road. On admission there a wound was found over the insertion of the right deltoid. The bone was not injured and there was no exit wound. He rapidly became very ill with dyspnoea, haemoptysis, cyanosis, etc. With stimulation, warmth, and oxygen he improved. Dullness was present at the right base, extending up to the angle of the scapula. It was evident that while the arm was abducted the missile had passed through the biceps muscle, missing the vessels and nerves, across the axilla, and into the chest. *X*-ray examination showed the foreign body in the lung about the level of the angle of the scapula, midway between the front and back of the chest. The diaphragm was elevated on the right side and there was a large haemothorax. This was aspirated and found to be sterile. He rapidly improved and was evacuated to England on August 31st, 1917.

The puzzling character of the single wound low down in the upper arm is emphasized by the subsequent history of this patient. Some time after his return to England the old wound in the arm was reopened in the expectation of finding a foreign body, and this despite the fact that the missile had already been localized in the lung.

A great change has recently taken place in the method of treating wounds of the chest. Briefly the principles of treatment now adopted are identical with those governing the treatment of gunshot wounds in other parts of the body. Wounds are excised, haemorrhage is controlled, fragments of fractured bone and large and accessible foreign bodies are removed from the lung and pleura, and large open wounds are closed. If reference is made to the most instructive article by Gask and Wilkinson[1] it will be seen that the indications for early operative treatment given there cover a considerable proportion of the cases. The only cases in which operation is not advised are those in which the wounds of the chest wall are small and clean, when there is no evidence of fractured ribs, and when the foreign body retained in the chest is small. In those cases treatment on general medical principles is adopted.

The results of this early operative treatment may be studied in the articles by Gask and Wilkinson, Anderson, Roberts and Craig, Lockwood and Nixon, and others which have recently appeared. They are a striking triumph for British surgery. But there are failures, and it is to those cases in which early operative treatment has not been adopted, or in which it has not been completely successful, that I wish to draw attention.

The chief cause of failure is sepsis. This is a most formidable occurrence after early operative treatment. Such cases are detrained on the lines of communication as unfit for further transport, and the mortality amongst these is high. The following case is an example:

CASE II.—*Lacerated Wound of Lung: Immediate Closure: Sepsis: Gangrene of Lung: Death.*
Pte. T. O'G. was wounded by a rifle bullet on October 4th, 1917, in the right side of the chest below the angle of the scapula. At a casualty clearing station the wound was excised, and fragments of fractured ribs and the rifle bullet removed. The lung was lacerated and there was a quantity of blood in the pleural cavity. The wound was completely closed without drainage.
On October 11th he was admitted to a general hospital off an ambulance train as "unfit for further transport." He was extremely ill. Pulse 130; dyspnoea and cyanosis. The wound was very septic with much discharge. He was considered to be beyond further surgical aid, but improved a little under treatment, and on October 13th the wound was reopened. The parietal wound was sloughing and stinking. The lung was completely collapsed and the pleural cavity filled with foul discharge and sloughs of the parietal pleura. The lacerated portion of lung was gangrenous. A silver irrigation cannula was inserted through a separate puncture and the wound drained with a large tube. He survived until October 18th.

In this instance as soon as the wound was reopened it was converted into an open "flapping" wound. It could not be resutured around a tube owing to the sloughing muscles and pleura. All that could be done was to make provision for drainage and irrigation and to pack the wound firmly with gauze.

CASE III.—*Closure of Wound: Septic Haemothorax and Purulent Bronchitis: Recovery.*
Pte. J. W. G. was wounded on August 1st, 1917, by a rifle bullet in the left side of the chest. The wound was explored and fragments of broken rib removed with the foreign body. There was a considerable haemothorax. It was not noted whether the lung was injured. The wound was stitched up. He was admitted to a general hospital on August 8th, from an ambulance train as "unfit for further transport." He was collapsed and cyanosed and there was extensive dullness in the left chest. The wound was reopened in part and a drainage tube inserted, giving exit to a large quantity of stinking pus. He was very ill for some weeks, purulent bronchitis of the opposite lung being a serious complication. He eventually did well, and was evacuated to England on November 17th.

These cases emphasize the danger of evacuating a case in which the chest has been primarily closed until such time as the possibility of infection has passed.

SEPSIS AFTER IMMEDIATE CLOSURE.

In what proportion of cases treated by thoracotomy and immediate closure of the chest is secondary sepsis to be feared?

Gask and Wilkinson[1] give the following figures: Sixty-seven thoracotomies for various injuries with immediate closure of the chest, followed by empyema in 22 cases (32 per cent.) and death in 19 cases (28 per cent.). In 15 of these cases the operation was performed for infected haemothorax, and in 12 (80 per cent.) an empyema subsequently developed, with 5 deaths (33 per cent.).

Anderson[2] tabulates the results of 58 thoracotomies with immediate closure. Secondary drainage was necessary in 12 (20 per cent.), and there were 14 deaths (24 per cent.). What proportion of the cases of empyema died is not apparent.

Roberts and Craig[3] give 25 thoracotomies and complete closure, with 10 deaths = 40 per cent.. The number of cases in which a secondary drainage was necessary is not given.

Lockwood and Nixon[4] divide their cases into two groups, before and after August, 1917. The figures refer to the latter group only. Of 82 thoracic and abdomino-thoracic cases in which thoracotomy was performed with immediate closure there were 24 deaths (29 per cent.). It is difficult to decide from a study of the statistical tables published with the paper in what proportion of cases infection of the pleura contributed to the mortality. Apparently in 5 cases only did an empyema develop. Empyema occurred in 5 cases in which no primary operation was performed, with 1 death.

Duval,[5] whose early work in the field of thoracic surgery has done so much to stimulate other surgeons, gives details of 29 thoracotomies with 8 deaths (27 per cent.), followed by empyema in 9 cases with 2 deaths.

In all these series of cases the late mortality and empyema rates do not appear to be included. This is impossible at the present time, and probably all the facts about these cases will not be available until long after the war. But it can safely be said that the mortality and morbidity among chest cases evacuated from the casualty clearing stations is still considerable, and almost entirely due to sepsis.

The best preventive of sepsis is early and thorough operative treatment with complete closure of the chest, but there will always be a number of cases received some time after the receipt of the wound, cases in which some degree of sepsis is inevitable. In some the infection is derived from the lung, and may not be prevented by primary operative treatment, however early and thorough.

Drainage.

Can these cases be saved by drainage? Colonel H. M. W. Gray,[6] in contrasting the results of immediate closure and drainage, gives the following figures: 198 cases in which the pleural cavity was drained, with a 50 per cent. mortality; and 57 cases of complete closure, with 29.8 per cent. mortality. He states that the operation with complete closure is therefore 20 per cent. better than the operation with drainage. I do not think this conclusion can be accepted literally, as the late, the most seriously wounded, and the most heavily infected cases would be drained.

Still the results of drainage are undoubtedly bad. Many cases succumb to sepsis, despite a free and dependent opening. This is to be prevented by treating the infected pleura and lung as other infected wounds are treated—namely, by washing the whole of the infected area with an antiseptic fluid at regular intervals—the progressive sterilization of the wound—combined with efficient drainage. I shall describe later how this may be done.

INFECTED HAEMOTHORAX.

Let us now turn our attention to those cases in which a primary operation is not performed, where a haemothorax is present, and signs of infection develop. According to Bradford and Elliott,[7] infection of a haemothorax occurs in about 25 per cent. of cases. Henry, who carried out the bacteriological investigations in this series, found that organisms such as the pneumococcus, *B. influenzae*, and *M. tetragenus* were present in about 20 per cent. of infected cases, and that in the remaining 80 per cent. streptococci, staphylococci, and anaërobes were found. Sir J. Rose Bradford[8] says: "It would seem that infection of a haemothorax is much more frequently derived from the skin or clothing than directly from the lung." He divides the cases into early and late infections. In the one case the infection occurs in the first few days and is undoubtedly due to organisms carried in by the missile. In the late cases symptoms may be delayed to the second or third week. The usual symptoms are increasing dyspnœa, rise in pulse-rate, elevation of temperature, etc., and in the later stages, jaundice. For the physical signs reference may be made to Sir J. Rose Bradford's paper. The cases in which urgent symptoms most rapidly arise are those in which gas develops in the pleural cavity. Marked displacement of the heart sometimes occurs with great rapidity.

These late cases of infection of a haemothorax are extremely dangerous. The patient may be in transit to the base or even to England, and if that be so he is at a great disadvantage, as very early operative treatment is necessary.

For this reason these cases require most careful watching. When treatment is required it is required most urgently. The co-operation of the physician and the surgeon is very necessary. For one thing, the condition of the opposite lung is of the greatest importance. Purulent bronchitis, a contralateral haemothorax, or pneumonia may be present, or pericarditis. Gask and Wilkinson mention a case in which a plug of blood and mucus had been aspirated into the bronchus of the opposite lung, death occurring from respiratory failure when the affected side of the chest was opened.

Diagnosis of Infected Haemothorax.

When symptoms suggesting infection arise the chest must be explored to determine the sterility or otherwise of the haemothorax. Valuable information is frequently obtained, but a negative report is not always reliable, and if too much importance is attached to these findings necessary treatment may be delayed. If the patient's symptoms suggest that infection has occurred the chest should be opened. Radiography, to determine the amount of fluid, position of missile, etc., is of the highest importance, but it must not be allowed to delay treatment.

Treatment of Infected Haemothorax.

Preliminary aspiration may be resorted to in very desperate cases, but the serious condition of the patient is only in part the result of the mechanical pressure of fluid or fluid and gas. It is largely due to septic absorption. If the patient is relieved an operation should be performed as soon as possible.

Drainage of the Chest.

This may be performed in one of two ways:

1. Resection of a short length of rib, and insertion of a drainage tube under local anaesthesia. This is the method usually adopted.

2. Thoracotomy under local or general anaesthesia. Resection of a considerable length (4½ to 5 in.) of rib, preferably the eighth, insertion of a spreader (Tuffier's *Ecarteur* is very satisfactory), inspection of the chest cavity, removal of clots, fluid, foreign bodies, fragments of bone, etc., repair of damage to lung and diaphragm.

The operation is, in fact, the same as that done in the early stages for chest wounds, only it is done in the presence of established sepsis. The operation may in certain cases be followed by immediate closure of the chest, but this is only possible in the early stages of an infection, and is certainly not practicable in all. In many cases a drain must be inserted.

The disadvantage of the first procedure is that no exploration of the chest is possible, and clots, foreign bodies, fragments of bone, cannot be easily removed. Nevertheless, in certain cases, this is all that can be done at the time. In some cases a more extensive thoracotomy may be required at a later date.

However established, either after a limited or an extensive operation, drainage alone is insufficient. When the infection is serious and well established it is not controlled by drainage, and the patient may succumb to sepsis. In any case free suppuration continues for a period more or less prolonged, much lymph is thrown out on to the lung, and the parietal pleura and the lung fails to expand. The cavity will perhaps close after considerable falling in of the chest wall, or the patient will be left with a chronic empyema.

Antiseptic Instillation.

Drainage should be supplemented by the progressive sterilization of the pleural cavity by the instillation of an antiseptic. This may be effected in various ways:

1. By irrigation of the cavity once or twice a day through a drainage tube. This is only satisfactory in the presence of a very small cavity. The greater part of the pleura cannot be reached.

2. By the method employed by Tuffier—namely, irrigation every two hours through a number of Carrel tubes supported on wires and inserted into the pleural cavity in all directions through the drainage aperture.

I have no personal experience of this method except in the case of small cavities. So far as I know there are no published records of the results, but they are said to be exceedingly good. The disadvantage of the method would seem to be that the dressings are difficult and tedious.

3. By filling the pleural cavity with Dakin's solution every four hours through the drainage tube, the patient lying on the sound side, the fluid being siphoned off at the end of two hours. (Campbell's method.[9])

However efficacious, this method would seem to be exceedingly tedious and very difficult to carry out in times of stress.

4. Irrigation through a special silver cannula which I have employed and which is described and illustrated in the BRITISH MEDICAL JOURNAL, February 2nd, 1918.

The cannula is used in the following way: After opening the chest a point on the chest wall towards the upper limit of the cavity is selected where the cannula may most conveniently be introduced. This is usually in the third or fourth space, about or just external to the mammary line; a small incision is made through the skin, and the cannula pushed through the intercostal muscles into the chest. The tip of the cannula should point outwards and downwards, and the instrument is fixed in position by two sutures to the skin. The original incision is then closely sutured around a drainage tube, which may be long enough to reach into a bottle of antiseptic fluid. The tube of a Carrel ampoule is then attached to the cannula, and the cavity irrigated every two hours. Hitherto I have generally used eusol, but no doubt other solutions will be as efficacious.

This is a simple and very effective device for instilling antiseptic fluids into the pleural cavity. If the cannula is judiciously placed (and in large cavities more than one can be inserted) the whole of the pleural cavity is easily exposed to the action of the antiseptic. When the thoracotomy wound is closely sutured around the drainage tube no dressings are required for several days. The tube passes out through the dressings into a bottle, and the cavity is washed out every two hours without any disturbance of the patient. The best method of fixing the drainage tube and occluding the wound around it is to pass two catgut

sutures, one on either side, through the muscles and through the wall of the tube supported by two silkworm gut stitches through the skin, also picking up the drainage tube. There is then no leakage around the tube, the dressings remain dry, and can be left undisturbed. The silver cannula is very easily inserted; washing through is quite a simple process, and is not attended with discomfort. The saving in dressings and in the nursing required is enormous.

The results of drainage and irrigation by this method are striking. The general condition of the patient improves rapidly. The amount of discharge is much lessened, and in many cases there is practically none. The lung expands quickly and undoubtedly much more rapidly than in cases treated by drainage alone.

The following two cases are examples of infected haemothorax treated in this way.

CASE IV.—*Late Thoracotomy: Irrigation: Rapid Recovery.*

Pte. C. N. McC. was wounded on October 9th, 1917, by a fragment of high explosive shell in the right side of the chest and head. He received no surgical treatment at the casualty clearing station. When admitted to a general hospital on October 14th there was no history of haemoptysis, but considerable dyspnoea. Haemothorax on the right side was explored, and a coliform bacillus cultivated from it. *X*-ray examination showed a foreign body in the upper part of the right lung, three inches above the nipple.

On October 18th thoracotomy was performed, the eighth rib being resected, a large quantity of bloody fluid evacuated, and clots cleared out. The lung was much collapsed. The foreign body was not sought for. An irrigation tube was inserted in front through a separate small incision in the nipple line in the fourth space, with a large drain behind. The cavity was irrigated every two hours with eusol. Rapid improvement in the general condition ensued. The discharge was never abundant.

On November 3rd it was noted that the lung was expanding very well. As soon as the condition of the patient permitted the scalp wound was explored and a fracture of the occipital bone found, without injury to the dura. This was dealt with in the ordinary way, and healed satisfactorily. He was evacuated to England on December 1st, there being a very small amount of discharge and the lung well expanded.

CASE V.—*Late Thoracotomy: Irrigation: Rapid Recovery.*

Pte. G. B. was wounded on October 10th, 1917—a through-and-through bullet wound of the left chest. He received no surgical treatment at the casualty clearing station, and was admitted on October 14th to a general hospital. He was then very ill with an evident gas-infected haemothorax, the heart being much displaced; 4½ in. of the eighth rib were resected; the left pleural cavity was filled with foul-smelling bloody fluid with gas; the lung was almost completely collapsed. A drainage tube and silver cannula were inserted, and the cavity irrigated every two hours with eusol. The patient improved rapidly; the discharge was never profuse. The temperature oscillated for some time, and convalescence was delayed by an attack of tonsillitis. The lung expanded well.

He was evacuated to England on December 1st, 1917. He was discharged from hospital early in January, 1918, and left for Australia, the wound being healed and his general condition excellent.

In most cases it becomes necessary to remove the silver cannula before the cavity is completely closed. The rapidly expanding lung presses the point of the cannula against the chest wall and causes some pain. It is as well to continue the progressive sterilization of the cavity after the cannula has been removed, by inserting an ordinary Carrel tube through the drainage wound for the instillation of the chosen antiseptic. This is continued until the lung is completely expanded. In a normal case the lung may be expected to expand rapidly and the cavity to close in a short time. Can anything be done to expedite this?

Tuffier and Depage[10] are of the opinion that the best way of hastening the expansion of the lung is, after sterilization of the chest cavity, to close the parietal wound by secondary suture, leaving a pneumothorax. The results are said to be good, but I know of no published records of cases. I have not ventured to do this in any of my cases. One is hampered by the fact that it is frequently necessary to evacuate them before the cavity is sufficiently sterilized, but the expansion of the lung is so rapid that it would seem to be unnecessary in the majority of cases.

CHRONIC EMPYEMA.

Chronic empyema is a not infrequent result of infected haemothorax. It is due to failure of expansion of the lung, and may be due to imperfect drainage or the retention of a foreign body. In comparatively early cases of chronic empyema, when the adhesions tethering the lung are not very dense, they may stretch after a time and allow sufficient expansion of the lung, which, with some amount of falling in of the chest wall, will permit the parietal and visceral pleura to come into contact and so effect closure of the cavity. If this does not take place suppuration continues for an indefinite period and the patient is likely to develop amyloid disease.

Operations for Closure of Chronic Empyema.

The following are the principal operations available for closing a chronic empyema cavity:

1. Estlander's, Schede's, or Wilms's operations* aim at effecting closure of the cavity by removing the whole or portion of the overlying ribs and allowing the chest wall to fall in, on to the collapsed lung. Schede, in addition to excising ribs, also removed the thickened parietal pleura. These methods are not free from danger; it is frequently necessary to perform the operation at several sittings, and complete success is not easily attained. At the best the lung is left unexpanded.

2. By combining an osteoplastic resection of ribs with filling of the cavity by the insertion of flaps of muscle cut from the latissimus dorsi, the scapular, or pectoral muscles.

These methods are apt to be only partially successful and the lung remains unexpanded.

3. By decortication of the lung after an osteoplastic resection. The thickened visceral pleura is stripped from the surface of the lung exposed in the cavity. By releasing the lung from the compression of its dense pleural covering it is thought that its re-expansion will be favoured. In some cases this undoubtedly occurs, but on the whole the results seem to be very disappointing. Haemorrhage is sometimes severe and the lung tissue is easily torn. It is a dangerous operation and not to be recommended.

4. By separating the adhesions which bind the lung down to the chest wall.

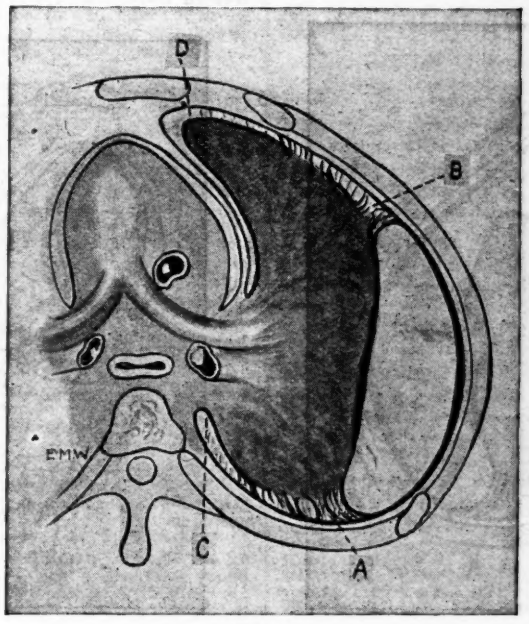

FIG. 1.

Types of Chronic Empyema.

My experience of chronic empyemata leads me to believe that there are three main types:

1. *Localized empyema*, such as is diagrammatically illustrated in Fig. 1. In this form the lung is partially collapsed, though in contact with the costal pleura both in front of and behind the empyema. The collection of pus may be laterally, posteriorly or anteriorly situated, though rarely the latter.

2. *A more complete form*, in which the lung is much more collapsed (Fig. 2), the anterior border having receded and the organ collapsed into the paravertebral fossa. This condition may involve the whole lung, though, as a rule,

* A very full account of these operations is to be found in a paper by S. Robinson, *Collected Papers of the Mayo Clinic*, vol. vii. p. 618.

the apical portion of the upper lobe is not collapsed and remains in contact with the chest wall. This is the variety commonly met with in large chronic empyemata.

3. *Complete Collapse of the Lung.*—In this form (Fig. 3) the organ is greatly shrunken and collapsed on to the hilum; practically all that remains is a stump of tissue attached to the vessels and bronchi.

There are other, much rarer, forms—multilocular, apical, diaphragmatic, and interlobar—and their occurrence must be borne in mind.

As an empyema develops a layer of fibrin is deposited on the pleural membrane, on that portion covering the lung and that lining the chest wall. In time organization of the fibrinous layer occurs, and a more or less dense fibrous membrane is the result. The parietal and visceral pleura become thickened, sometimes to an astonishing degree. If the empyema is drained in its early stages before fibrous changes have occurred rapid expansion of the lung is the rule. But fibrous changes prevent expansion of the lung. Fibrosis may be due to delay in recognizing and draining the empyema or to failure to control the infection after drainage, with consequent persistent suppuration. As has been said, the resulting chronic empyema may be cured by operations producing collapse of the chest wall or by removing the thickened visceral

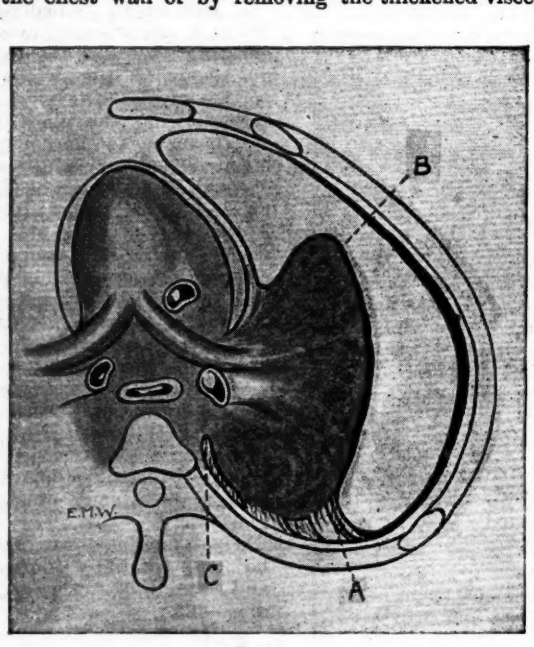

FIG. 2.

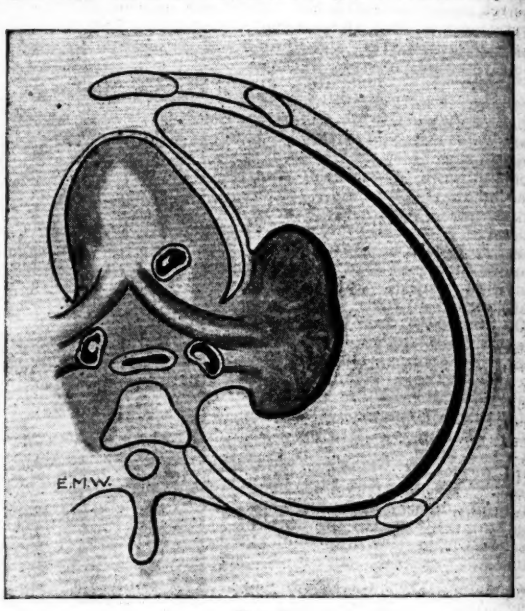

FIG. 3.

pleura covering the surface of the lung exposed in the cavity. No doubt the thickening of this portion of the pleura is a factor in preventing expansion of the lung, but it is not the only or indeed the chief factor. This expansion is prevented by the firm adhesions at the points marked A and B in Figs. 1 and 2. It is the fixation of the lung at these points which prevents expansion. At A and B the adhesions are generally very dense and firm, but beyond these points—in the areas figured A to C, B to D—adhesions are much less dense. If these barrier adhesions at A and C are separated the lung will expand. It seems probable that the limited success which has attended the operation of decortication is not due to the fact that the removal of the thickened visceral pleura has permitted expansion of the lung, but is the result of the undesigned separation of these barrier adhesions. The object of the operation for chronic empyema should be to close the cavity by effecting expansion of the lung, and this can be done by dividing these barrier adhesions at the points marked A and B on the diagrams. In fairly early cases these barrier adhesions can be separated by the fingers; when they are very firm the scissors will be necessary. The lung should not be wounded nor should any attempt be made to strip off the thickened visceral pleura from its surface. Some immediate expansion occurs always, and in some cases the results are astonishing. Once the barrier adhesions are passed separation along the lines A to C, B to D is very easy. Adhesions to the diaphragm may be separated in a similar way. Separation of the adherent lung is not usually attended by much haemorrhage; in any case this is easily controlled by irrigation.

This method of freeing the lung is only possible in the types of empyema depicted in Figs. 1 and 2. When collapse of the lung is absolutely complete, as illustrated in Fig. 3, the cavity can only be closed by an extensive osteoplastic operation.

The following cases are examples of chronic empyemata treated in this way:

CASE VI.—*Chronic Empyema treated by Stripping Thickened Pleura: Recovery.*

Pte. T. W. was wounded on September 15th, 1917, by shell fragment. An infected haemothorax was treated in the casualty clearing station by resection of a portion of rib (ninth) and drainage. There was continuous discharge for a month.

On October 14th, when admitted to a general hospital, he was very anaemic, with rise of temperature, poor pulse, and much stinking discharge. The whole of the left chest was dull except at the apex. *X*-ray examination showed a foreign body in the lower lobe of the lung.

On October 18th thoracotomy was performed, 5 in. of the eighth rib being resected, and a large quantity of foul pus evacuated. The cavity occupied two-thirds of the pleural space and the lung collapsed into the paravertebral fossa. There was a sinus in the lower lobe of the lung leading to the foreign body, which was removed (a piece of high explosive shell). The adherent lung was stripped from the paravertebral fossa without difficulty and with little haemorrhage, and marked immediate expansion of the lung occurred. The original wound was explored and found to drain a small loculus below the main cavity. There was considerable necrosis of the ninth rib at the site of the previous resection. The silver cannula was not inserted, as one was not available. The cavity was irrigated by the side of the drainage tube. On November 3rd it was noted that the lung was expanding very satisfactorily and that there was very little discharge.

On December 1st he was evacuated to England, with the lung expanding very well and his general condition excellent. There was still some discharge from the site of the first operation, and sequestra were coming away.

A note on the further history of this patient was received on January 23rd, 1918. The wounds were healed, and the left side of the chest was expanding very well, but there was still some flattening of the chest.

In this case the immediate results of stripping the adherent lung were very striking. The barrier adhesions were so dense and firm that it is certain the cavity would never have closed unless they had been divided, and a secondary rib resection would have been required.

CASE VII.—*Chronic Empyema treated by Stripping Thickened Pleura: Recovery.*

Pte. J. F. was wounded on November 17th, 1917, in the right chest below the nipple. The wound was excised and the fractured rib removed. The diaphragm was perforated, and a fragment of shell was removed from the liver; the wounds in the liver and diaphragm were sutured, the haemothorax

evacuated. The lung was not damaged. The chest was closed without drainage.

Aspiration was performed on November 20th, 24th, and 30th. On the last occasion pus with faecal odour was evacuated. Aspiration was performed again on December 1st, and on December 12th he was admitted to a general hospital. He was very upset by his journey from the casualty clearing station, and was received in a state of collapse. There was an obvious empyema. The thorax was reopened, Tuffier's spreader inserted, pus evacuated, and adherent and collapsed lung stripped from the paravertebral fossa. Considerable immediate expansion of lung occurred. A silver irrigation cannula was placed in position anteriorly. The thoracotomy wound was tightly sutured around a long drainage tube. The patient was propped up in bed on a bed-rest, the drainage tube passing out through the dressings between the bands of the bed-rest into a bottle. The pleural cavity was irrigated every two hours with dichloramine-T, 3 per cent., through the silver cannula.

From the beginning there was very little discharge. The dressings were not disturbed for five days; the wound was then healed except at the point of exit of the tube. The dressings remained dry until the large tube was removed on the eleventh day and replaced by a smaller one. The silver cannula was removed and reinserted from time to time. The patient's general condition rapidly improved; the temperature, after some oscillations, fell to normal.

On December 29th, 1917, it was noted that the right lung was markedly expanded, and that breath sounds were heard down to the level of the tube. After the silver cannula was removed the small remaining cavity was irrigated through a Carrel tube inserted through the drainage aperture.

The further progress of this case was uneventful. A note received early in February, 1918, was to the effect that his general condition was excellent, and the lung completely expanded; a small sinus remained at the site of drainage.

CASE VIII.—*Chronic Empyema: Repeated Thoracotomy: Stripping of Lung.*

Pte. J. M. L. was wounded by a piece of shell on October 25th, 1917. The missile passed into the left chest and penetrated the diaphragm. Thoracotomy was performed at the casualty clearing station, the diaphragm sutured, and the chest closed. Laparotomy was performed, but no intra-abdominal lesion detected. On November 5th 1½ in. of rib was excised and a fragment of shell removed from the pleura. The cavity was washed out with flavine and closed without drainage. On November 9th 2 in. of rib were resected and one pint of stinking pus evacuated; drainage. On November 13th 2 in. of the third rib were removed. A cavity containing serous fluid was opened, washed out, and closed. A note on November 28th stated that the left lung was completely collapsed, and that the tube drained a large cavity.

When admitted to a general hospital on December 1st there was a large quantity of discharge and the lung was collapsed. *X*-ray examination showed a small fragment of shell lying beneath the inner end of the clavicle. Culture yielded streptococci, staphylococci, and coliform bacilli. Thoracotomy was performed by Major J. H. Cobb through the old wound over the seventh rib, the cavity wiped out, and adherent lung stripped; some immediate expansion occurred. A silver irrigation cannula was inserted.

On December 31st, 1917, there was practically no discharge from the cavity, but it was still of some size, and extended upwards towards the clavicle. Some expansion of the lung had occurred. The general condition was very markedly improved.

A further note of this patient's condition was received in February, 1918. He was very well, and the lung was completely expanded; a small sinus remained at the site of the first operation.

It is extremely important in every case of chronic empyema to have a radiograph of the chest taken, not only to discover the presence of a missile, but to exclude the possibility of a lost drainage tube. On three occasions in the last six months I have removed a lost drainage tube from the chest; one case was one of my own. An infected haemothorax was drained after resection of a rib under a local anaesthetic. The tube was secured to the skin by two silkworm-gut sutures. The following day it was missing. A radiograph showed it to lie inside the chest, whence it was easily removed. In another case (a man evacuated from a casualty clearing station, and put off the ambulance train as unfit for further transport) the patient complained of great pain in the chest. Five inches of half-inch drainage tube with a safety-pin attached was extracted from the pleura. Both these cases did well.

In another case a drainage tube was removed from the track of a missile through the substance of the upper lobe of the right lung. It had probably been lost for several days. This patient ultimately died from gangrene of the upper lobe of the lung.

The question arises whether it would not be better to provide adequate drainage and to sterilize the cavity by irrigation before separating the adherent lung, which could be done at a later stage. In very septic cases, in exhausted and debilitated individuals, and in patients with signs of incipient amyloid disease, this would no doubt be the better course.

The Late Removal of Foreign Bodies from the Lung and Pleura.

If an operation is performed for infected haemothorax or empyema the foreign body, whenever accessible, should be removed if the patient's condition will permit it.

CASE IX.—*Removal of a Foreign Body in the Absence of Sepsis.*

Pte. C. W. was wounded on October 8th, 1917, by a piece of high explosive shell which entered the left chest close to the nipple.

On October 14th he was admitted to a general hospital. The note stated that he had had a pneumothorax on the left side, but no active treatment had been necessary. His general condition was good. *X*-ray examination showed a foreign body—a long, ragged piece of shell—in the lower lobe of the left lung.

On October 25th thoracotomy was performed, 4½ in. of the eighth rib being resected. Tuffier's spreader was inserted. The foreign body was felt in the lower lobe of the lung; the lung was incised, and the foreign body extracted. The wound in the lung was sutured. Complete collapse of the lung was prevented by adhesions. The patient was not at all disturbed during the operation, the pulse remaining quiet throughout. The wound was completely closed by suture in layers—pleura, muscles, and skin.

On November 16th he was evacuated to England. The wound had healed by primary intention, the lung had expanded well, and his general condition was excellent.

The question of the necessity of removing the foreign body in such a case as this has still to be determined. I have heard it seriously advanced by an administrative officer that any foreign body, however small and wherever situated, should be removed from the chest, for the reason that no man who knows he has a foreign body in the chest ever goes back into the front line. The same can probably be said of men upon whom thoracotomy has been performed. There are definite indications—haemoptysis, abscess of lung, etc.; pain and dyspnoea are also indications, but it is not always easy to be sure when these complaints are genuine.

My thanks are due to Colonel T. Gowans for permission to publish the details of the cases mentioned. I am also greatly indebted to Captain T. S. Parkinson and Captain M. J. Stewart for their invaluable assistance.

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WAR SCARS AND THEIR PAINS:

*WITH SPECIAL REFERENCE TO PAINFUL AMPUTATION STUMPS.**

BY

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CIVILIAN and pre-war scar tissue was made up of fibrous tissue in which there were few foci of round cells and fewer organisms. These round cells represented areas of repair and did not exist for long. In consequence they were of little importance. In war scars all these conditions were increased and exaggerated, the round cells of the inflammation being more numerous and polynuclear, the neighbouring connective tissue cells proliferating and some also becoming oedematous and distended with fluid, whilst organisms, as long as three years after the wound had healed, have been grown from the ends of the nerves in a painful amputation stump. The nerves were removed at operation and dropped straightway into a culture medium. In such ways cultures of staphylococci, colon bacilli and diplococci have

* An address delivered at the Welsh War Hospital, Cardiff.

been obtained. This war scar tissue is, then, an irritant of the first water, containing contracting fibrous tissue, inflammatory foci, varying in number, and pathogenic organisms. It is like a fire, and as the smoke from that ascends the chimney and finds its way through cracks in the bricks where the mortar is bad, so the irritation of this collection of war scar tissue ascends the stump, starting infective inflammation in muscles, arteries, veins, bones, connective tissue, and nerves. There are at least three points of importance here: the pain is of composite origin, the pain need not be of nervous origin, but from the osteomyelitis of bone or the arteritis of an artery, in which case it is folly to confine the treatment to the nerve trunks.

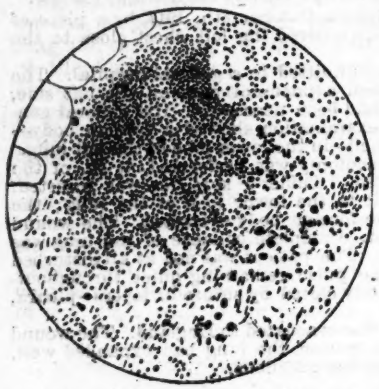

FIG. 1.—An inflammatory focus of round cells from an amputation neuroma.

How do the organisms get up into the painful stump? Do they go by direct extension or are they carried up in the neural lymphatics, like the toxins in a case of tetanus? Some months ago Professor Marinesco and I were investigating the painful nerves of an officer whose arm had been shattered about the elbow, and had been amputated below the shoulder-joint. The amputation wound was well healed, and had been so for some months. No other wound was present. Not until the nerves had been removed and embedded in a paraffin block for section cutting did we discover a macroscopic piece of metal in the nerve, about the size of a pin's head. How did this metal get there? Did it enter the wound near the elbow, had it been blown past the site of the future amputation and ended up in one of the nerves of the future stump, or was it carried up by the neural lymphatic stream?

Then Professor Marinesco and I were often finding dark patches, due to some powder, on our sections, and at first these were regarded as artefacts due to our faults or carelessness, such as dust. However, some were shown to be iron dust. In addition, these powder patches were too frequent to be always our fault. Finally, it was concluded that the powder was shrapnel pulverized by the action of the body juices on masses embedded in the wounds and carried upwards by the lymph stream. Then we found particles of fibres, probably silk, also carried up into the structures, including the nerve ends, in these painful stumps. These particles varied in size and shape, and they were regarded as relics of the fragmentation by the body fluids of silk ligatures afterwards carried away by the lymph stream. Then there were the cultures of organisms.

This train of evidence is enough to teach us of the upward lymphatic stream and the irritative effect of silk; it is a kind of internal seton. That some silk is carried inward by the lymph stream and some is shed outward from abscesses, sinuses, and discharges of the wound, shows that war time scar tissue is utterly unable to encapsulate surely an unabsorbable suture. It should never be used in war wounds. The great pathological characteristic of painful stumps was the presence in them of foreign bodies, usually multiple, some put there by the enemy, and others, perhaps most, by ourselves—such as the silk.

When a nerve is divided it always regenerates. In general it regenerates so as to reinnervate the deinnervated parts. But if the deinnervated parts have been removed by amputation then the fibres of regeneration seem to innervate all structures they meet—arteries, veins, bones, muscles, and connective tissue. As they do this they sooner or later must come across the inflammation infested scar tissue, when we have the simple algebraical equation:

Nerve + inflammation focus = pain.

The particular function of the nerve affected—motor, sensory, vasomotor, etc.—does not seem to matter.

To make this worse, as they regenerate the nerve fibres branch and branch, increasing manifold the chances of trouble. No one can do more than delay regeneration, which is like the flow of a river. None can stop it. The lesson is therefore that this war scar tissue must be done away with before, at least, much regeneration can take place. This is to be accomplished by heat, light, *x* ray, radium, vibration, electricity, and ionization. The duty of carrying it out belongs to a special, not a general, hospital.

FIG. 2.—An inflammatory focus in the midst of a new formation of nerve fibrils.

Should the regenerating fibres encounter an obstruction, they pool up like a river, forming a tumour—a *regeneration neuroma*. Then they flow on.

If this infective scar tissue is not removed by art or craft, reamputation will become necessary, involving a serious loss of power and usefulness to the patient. This reamputation must be done much higher, as the following case shows: A man had had an amputation just above the knee. He had an obstinately painful stump. I removed the whole contents of Hunter's canal, up which the smoke of irritation had ascended from his wound. The internal saphenous nerve was examined microscopically 6 to 8 inches above the amputation. It showed signs of infective inflammation. It would have been very hard on the man to amputate above the inflammation. Such a case is only too likely to prove unsatisfactory, as there were no clinical signs to guide the surgeon—such as a swollen tender painful nerve. One must never judge harshly. Not all have played games and learned to deny self for the benefit of the whole—true team work. How, then, is such a case usually to be judged? The team who worked on the patient are judged harshly. This should not be.

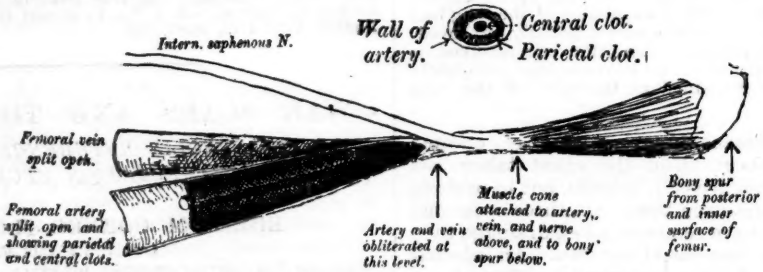
Intern. saphenous N.
Wall of artery.
Central clot.
Parietal clot.
Femoral vein split open.
Femoral artery split open and showing parietal and central clots.
Artery and vein obliterated at this level.
Muscle cone attached to artery, vein, and nerve above, and to bony spur below.
Bony spur from posterior and inner surface of femur.

FIG. 3.—The infected contents removed from Hunter's canal.

Often before fitting an artificial limb a stump appears all right. To fit an artificial limb or apparatus is sometimes like putting a poker into a fire. It stirs it up to a blaze, making patent its irritations and imperfections.

In the nerve end the irritation may cause arteritis, endarteritis, phlebitis, lymphangitis, and thrombosis in the intraneural vessels. The irritative process travels up more freely and further along the vessels than along the nerves. The neuromata on the inner side of arm stumps illustrate this. Therefore should the vessels be cut short at every amputation.

A CASE of intussusception in the jejunum 10 inches from its commencement, due to an adenoma of an accessory pancreas, is reported by Benjamin (*Ann. Surgery*, 1918, lxvii, 293). There was a cauliflower-like mass 2 by 1½ by 1 in., projecting from the mucous membrane by a stem. The literature of accessory pancreas is summarized, and 17 other cases in the jejunum are collected from various sources. Though it is recognized that an accessory pancreas by traction may produce a diverticulum of the intestine, it does not appear that an intussusception has been previously reported.

THE EMERGENCY TREATMENT OF WOUNDS.

BY

LIEUT.-COLONEL A. J. HULL, F.R.C.S., R.A.M.C.

IT has been abundantly proved by the experience of war that wounds treated by excision heal in many cases by primary union. Further, the fact is established that even when primary union does not occur the more serious types of infected wounds are avoided by this measure, provided the wound is so treated at a suitable time. Anatomical considerations, of course, prevent complete excisions in many cases.

The successful treatment of wounds depends upon the stage at which the wound comes under treatment. Wounds, fortunately, pass through a pre-inflammatory stage, and during this stage it is possible to remove the infected tissues, leaving a non-infected wound. Carrel has shown that a wound passes through a fairly definite chronological sequence. During the first few hours following its infliction a wound is comparatively clean, judged by bacteriological tests. The smears are usually negative. The organisms have not had sufficient time to multiply in order to appear in the secretions. At the end of five or six hours organisms are frequently found in smears, and after twelve hours the wound has commenced to react. Polymorphs appear in large numbers, and bacteriological examination shows a large number of organisms; moreover, the organisms have now spread to the depths of the wound and abound in the particles of fractured bone. It follows that during the first twenty-four hours the wound is amenable to surgical treatment, and after that period an inflammatory stage appears, during which the results of excision have been very much less satisfactory.

The ideal treatment for infected gunshot wounds is to excise them during the pre-inflammatory stage—that is, within twenty-four hours of the infliction. The exigencies of war will more often than not make this impossible. The question therefore arises whether it is possible to prolong the pre-inflammatory stage.

Several observers working with flavine have recorded the appearance of the wounds, which are described as *in statu quo*. There appears to be suppression of suppuration and inflammatory reaction during certain stages of treatment. It may be possible to make use of this or a similar reagent in order to prolong the pre-inflammatory stage sufficiently to allow surgical technique to be employed during the optimum period.

The only treatment which a wound at present receives in war previous to being excised or otherwise dealt with at a casualty clearing station is the application of a first field dressing. It is true that this statement requires modification, inasmuch as it may be injuriously redressed on several occasions, thus delaying the cleansing operation; but the depths of the wound, the shattered fragments of a fractured bone, the parts that really matter, receive no treatment.

In fact, in spite of the advances in surgery, particularly in the treatment of wounds, the emergency treatment is no more efficacious than it was in the days of the Trojan wars. The dressings applied to wounds before the arrival at a casualty clearing station have no influence whatever upon the infection in the depths of the wounds. Improved results of the treatment of wounds can only be achieved by some method of either excising the wound during the pre-inflammatory stage or by prolonging that stage, and research in the latter direction appears to be most desirable.

The old first field dressing appears to be totally inadequate. It is suggested that, as soon as practicable after the infliction of a wound, it should be instilled with some non-irritating antiseptic, in order to inhibit the growth of micro-organisms. Within the first few hours, unless septic foreign matter remains in the depths of the wound, pathogenic organisms are found to be few in numbers and confined to the surface of the wound.

When septic foreign bodies are retained in a wound, the growth of organisms would be enormously retarded by the presence of an inhibiting antiseptic. Septic cloth would become soaked with the reagent injected, and would become comparatively innocuous. Excision of the wounds would be carried out in due course with greatly enhanced likelihood of primary union.

Several reagents which are non-irritating inhibitors of septic organisms are available. Flavine in 1 in 1,000 solution or dichloramine-T would appear to be suitable antiseptics for the purpose. Brilliant green is frequently used (as recommended by Captain Hey) as an antiseptic stain. The wound is filled with brilliant green, which acts as a guide to infected tissue, previous to the excision of the septic area. This reagent would fulfil a double purpose if instilled into the wound at an early stage, by acting as an inhibitor of sepsis, and a guide to the septic tissue. Ensol and Dakin solutions would be too evanescent and too transient in their action for this purpose—as, in fact, they are for any wound treatment during transport.

If a 5 per cent. solution of salt be combined with the antiseptic reagent, the micro-organisms will not only be inhibited in the wound, but an outpouring stream of serum will be produced which will carry infection from the wound, and prevent the ingress of organisms.

The technique of wound instillation is of the simplest possible description. The chosen solution is instilled by means of a fine glass nozzle attached to a Higginson's syringe, care being taken to inject fluid into the depths of the wound. This treatment is certainly not beyond the scope of an advanced dressing station.

There is also indication for the use of this method in casualty clearing stations. In times of pressure a patient may have to wait a day or more before an operation can be performed. The preliminary instillation of the wound with an inhibiting antiseptic solution may make the difference of the wound being operated upon in the pre-inflammatory stage, or when suppuration has commenced. Still more desirable is such treatment when it is necessary to transfer a patient to the base from casualty clearing stations without operation.

I am not at present prepared to recommend the indiscriminate irrigation of wounds of the head and trunk as a preliminary measure, particularly if performed by unskilled hands, but I think its use in the case of wounds of the extremities, particularly compound fractures, is strongly indicated.

The use of preliminary instillation may be objected to on the grounds that the nozzle may introduce infection and that the injection of fluid may spread sepsis. A glass nozzle is easily sterilized between each injection, even at an advanced dressing station, and it is extremely doubtful if such sterilization is necessary. The injection of antiseptic fluid will not spread infection beyond the original limits of the wound, which would become infected in any case. Carrel made use of the instillation treatment in the later treatment of wounds, particularly after wound excision.

By beginning wound instillation within an hour or so we are treating a wound which is bacteriologically as sterile as an excised wound, and but for the tissue necrosis which follows gunshot wounds the early instillation of a suitable antiseptic might replace wound excision.

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TEMPORARY CAECOSTOMY IN RESECTION OF THE DISTAL PORTION OF THE COLON FOR NON-OBSTRUCTIVE CONDITIONS.

BY

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THIS note has been written to draw attention to a little surgical manœuvre which has been of service to me in cases of resection of portions of the distal half of the large intestine. This step in the surgical technique of excision of any portion of the large bowel between the splenic flexure and the sigmoid colon I learnt in the course of conversation with a very distinguished Scottish surgeon who employed it, but in France I have met with very few surgeons who appeared to be familiar with the procedure, either in theory or in practice. It is of course established now that excision of portions of the large intestine for gunshot injury in the "forward area" is only

rarely indicated; and, indeed, in the few papers upon gunshot wounds of the abdomen which have been sent to me by my surgical friends, or to which I happen at present to have access, there is scarcely any record of resections of the large bowel, and hardly a note of a successful case.

A. I have employed temporary caecostomy in the United Kingdom in cases of *resection of the large intestine for carcinoma* originating in any part from the splenic flexure to the pelvic colon. I am not referring to cases of intestinal obstruction above an operable cancerous growth, where, of course, the obstruction must be relieved by operation before any idea be entertained of extirpating the tumour, but I am advocating temporary or provisional caecostomy in cases of excision of a carcinomatous splenic flexure, descending, iliac or pelvic colon, where no obstruction exists. The opening acts as a vent for gases generated in the colon above and near the suture line, and acts as a safety valve in preventing any strain on the junction.

I am aware of the brilliant results obtained in excisions of cancerous segments of the large bowel by distinguished operators, but I submit that this little point of technique may be of value to surgeons of ordinary dexterity; it has certainly added to my mental comfort in the treatment of these cases, and it has as certainly promoted the convalescence of the patients.

B. I have also on several occasions made use of temporary caecostomy when operating in the United Kingdom *to close a proximal inguinal colostomy* performed in France for some severe gunshot injury of the rectum. Opinion is not yet finally settled as to the best means of closing an inguinal colostomy, but I have personally usually performed an intraperitoneal operation, excising the "spur" and practising end-to-end union of the bowel. In such cases, as in those of excision of a carcinoma, I have found temporary caecostomy to be a measure of safety. It might appear to be a retrograde step to substitute a stoma in the right iliac fossa for one of the left side, but if the caecum is simply anchored to the parietal peritoneum the opening closes readily enough, especially if the drainage tube in the caecum be inserted after the manner of a Senn's gastrostomy. I have never had to undertake any operation to close a caecostomy performed in this way, and the stoma generally closes in ten days to a fortnight.

C. Excision of portions of the distal colon *for gunshot injury*. It is an axiom of military surgery that in the cases of gunshot wounds of the bowel the least possible should be done, and that suture should be preferred to resection unless the latter is inevitable The whole experience of the surgery of this war has demonstrated that suture suffices in the large majority of cases of injury to the colon; by reason of the size of this portion of the intestinal tract its wounds are mostly of the nature of perforations or tears, and the bowel is rarely completely divided. Moreover, the absence of numerous loops and coils makes multiplicity of wounds of the colon uncommon when compared with their frequency in the small intestine. Nevertheless, I do claim that there are certain cases of gunshot injury of the large intestine where a resection of the damaged portion is indicated, more especially when infarction of the bowel is present. Further, in some cases where the wound of the large intestine has been of such magnitude or difficulty of approach as to suggest the formation of an artificial anus, recourse might well be made to excision and suture, when the high mortality of the colon anus is borne in mind. The adoption of this procedure would, of course, be influenced by the general condition of the patient.

If excision is to be practised let the removal be free, and let the bowel sections be planned in accordance with the dictates of general surgical experience. The wide removal of damaged bowel and of the adjacent damaged and devitalized retroperitoneal tissue which the resection facilitates finds justification not only in being in keeping with the ordinary rules for the treatment of gunshot wounds by excision of the damaged area, but also by the end-results in those cases in which this more drastic operation has been undertaken. With few exceptions these have all been cases of gunshot injury to the distal portion of the large intestine, and in these the temporary or provisional caecostomy performed at the time of resection has proved to be a measure of safety. The opening has been made into the caecum at the end of the operation while the sister is suturing the skin of the laparotomy incision. The "gridiron" method affords convenient access to the caecum, and the drainage tube is inserted like a Senn's gastrostomy. If a collodion or mastisol dressing be applied to the laparotomy wound, there does not appear to be any extraordinary risk of infection of the latter.

CASE I.—*Penetrating Wound of Abdomen; Severe Wound of Caecum and Ascending Colon; Excision of Caecum, Ascending Colon and Hepatic Flexure; End-to-side Union of Ileum and Transverse Colon; Suture of Jejunum.*

Pte. J. K. was admitted on November 20th, 1917, into a casualty clearing station with two penetrating wounds of the abdomen. Two fragments of shell had entered the abdominal cavity through the right flank, and the caecum and ascending colon were both badly damaged and perforated, the latter being almost completely divided. There were four wounds of the jejunum, which were sutured. Operation was performed about ten hours after the man was hit, and at the time he was in rather poor condition. The wounds in the flanks were widely excised, and subsequently vigorously treated by Carrel's method; the terminal part of the ileum, the caecum, ascending colon and hepatic flexure were excised, and an end-to-side junction performed between ileum and the transverse colon. The patient made a good recovery and was evacuated to the base, and I last heard of him in an unsolicited letter from the medical officer in charge of a Red Cross hospital in the South of England, telling me of the patient's complete recovery, and congratulating me on the successful case.

CASE II.—*Penetrating Wound of Abdomen; Resection of Jejunum; End-to-end Union; Resection of Distal Part of Transverse Colon, Splenic Flexure, and Descending Colon; End-to-end Union; Caecostomy.*

Lce.-cpl. W. was admitted into a casualty clearing station in the early hours of a February morning with a penetrating wound of the abdomen, produced by a shell fragment. The piece of shell entered the left flank, completely dividing his descending colon and shattering its adjacent edges. The upper jejunum was the site of several large perforations, and its mesentery was perforated and bleeding; three feet of jejunum were resected and an end-to-end junction performed. The missile had made a large rent on the posterior aspect of his transverse colon, and passing forwards and to the right had just penetrated the anterior surface of this portion of the bowel. It was deemed safer to excise the damaged portion of the transverse colon, splenic flexure, descending and iliac colon, and an end-to-end junction was performed between the proximal portion of the transverse colon and the sigmoid flexure. The wound of entry was excised widely and "Carrelled"; a temporary caecostomy was then performed. Apart from massive collapse of the lower lobe of his left lung and some trouble with the laparotomy wound, the patient made a good recovery, and was evacuated to the base a month later, and subsequently to England.

CASE III.—*Penetrating Wound of Abdomen; Perforations of Jejunum Sutured; Resection of Small Intestine; Wounds of Sigmoid Resected.*

Pte. C. W. was admitted into a casualty clearing station in the early hours of a January morning with a penetrating wound of the abdomen, due to a fragment of shell. After the patient had been warmed and resuscitated for a couple of hours, the abdomen was opened, and nine or ten perforations of the jejunum were sutured, and in addition a resection of 18 in. of small intestine lower down was performed. Four wounds of the sigmoid were found, two of which were on the mesenteric border. As the bowel was in a state of infarction, the damaged portion was resected, and an end-to-end junction made. The foreign body was removed from the musculature of the left flank, and the damaged tissues widely excised; a temporary caecostomy was performed. The patient's recovery was uneventful, the caecostomy closed after ten days, by which time the rectum was acting satisfactorily, and he was evacuated to the base in three weeks, and subsequently went to England. Curiously enough, this patient's father had undergone an abdominal operation at my hands in Middlesex Hospital some few years ago.

CASE IV.—*Penetrating Wound of Abdomen; Large Tear of the Iliac Colon; Limited Resection; Temporary Caecostomy.*

Pte. D. L. was admitted into a casualty clearing station on November 21st, 1917, with a shell wound penetrating the left side of the abdomen. The fragment had entered the left iliac fossa in front and had passed downwards and backwards, shattering the anterior part of the crest of the ilium and emerging over the left hip. There was at least a pint and a half of fluid in the lower part of the abdominal cavity, consisting largely of blood, but also of extravasated intestinal contents. Some fourteen hours had elapsed since the patient was hit, and this fluid possessed a distinctively offensive odour. The damaged segment of the colon was resected—about 2½ in. in all—and an end-to-end union performed. The wounds of entry and exit were widely excised, the loose fragments and the damaged bone were removed, and Carrel's treatment carried out with vigour; temporary caecostomy was performed. The patient made a good recovery, and by the time he was evacuated to the base his lower bowel was acting satisfactorily, and the caecostomy had closed.

Two of these cases are of special interest, inasmuch as they are resections, not only of portions of the large intestine, but also of the small. Satisfactory accounts of these two were obtained on April 23rd.

I would reiterate that the operation of excision of a damaged portion of large intestine is by no means advocated as an alternative to suture, but as an expedient to which it is sometimes justifiable to resort. The narration of the above cases will show that they have all been of a severe type, and that two, indeed, have been double resections. The purpose of the paper is merely to show that caecostomy is a measure of safety in cases of resection, and that the latter operation is justifiable in a certain few cases of gunshot injury. These cases have been operated upon in an advanced clearing station, which in its operating theatre and in the heating arrangements of the wards bore the impress of the engineering and architectural abilities of its then commanding officer; but I have also been fortunate in enjoying the assistance of an anaesthetist and of operating theatre sisters of far more than ordinary skill.

Sir Harold Stiles has very kindly allowed me to make use of his name in connexion with this communication, and in a personal letter he writes: "Whenever I resect a carcinoma, an artificial anus, or a faecal fistula of the distal half of the large intestine, the last step in the operation consists, as a matter of routine, in stitching a small area of the caecum to the abdominal wall, so that a small opening can be made into it at the end of twenty-four or forty-eight hours." I very gratefully acknowledge my indebtedness to him for this valuable hint in surgical technique, for although I have usually made my opening in the caecum at the same time as the resection was performed, and although the minutiae of the actual operative procedure may differ, the idea I learnt in visits to Sir Harold at the Chalmers Hospital, Edinburgh.

For permission to use the notes of the military cases included in this paper I am indebted to Lieut.-Colonel E. F. L'Estrange, R.A.M.C.

THE LOCAL APPLICATION OF LIQUID GLUCOSE IN THE TREATMENT OF CERTAIN SUPERFICIAL BACTERIAL INFECTIONS.

BY

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THE object of this note is to call attention to a method of treatment which in certain conditions that I have observed has produced very good results and which is perhaps deserving of wider use.

Glucose is in frequent use in the laboratory as a bacterial foodstuff, and its application to the site of an infection might at first seem not to be in the best interests of the infected host. But it may be that there are other ways of frustrating the ill effects of the invading bacteria than by their partial destruction with disinfectants. For instance, by altering the nature of the substrate on which they are acting, their products might be rendered less harmful; or the infected region might be made more suited as a nidus for some harmless organism which would then more easily displace the pathogenic one.

The following factors have to be considered to bring about an understanding of the principle which I have tried to exploit in the adoption of this method, and these will be the best guide to its use in any particular instance in which it may seem to be indicated.

1. Almost all pathogenic bacteria are capable of fermenting glucose, some of them, however, much more slowly than others.

2. During fermentation a definite acidity of the medium is produced.

3. Many of the bacterial toxic bodies, using the term in its widest sense, are formed to the greatest advantage in a definitely alkaline medium, and the production of these substances is in some cases distinctly inhibited by the presence of glucose; diphtheria toxin is an instance in point.

4. Stinking discharges are in most cases due to the tryptic digestion of proteins, and this is a form of enzyme action which can only go on to advantage in an alkaline substrate, and which ceases in the presence of even a slight degree of acidity. This form of digestion, as it may be called, is analogous to that which goes on in the intestine with the formation, among other stinking bodies, of indol and skatol. The formation of indol by bacteria is said to entirely cease in the presence of a very small amount (0.25 per cent.) of glucose. That, as a matter of fact, I think, must depend on whether the particular bacteria ferment glucose rapidly or whether they first commence to digest the proteins. Certainly some bacteria, as, for instance, those causing the foul smell in ozaena, will produce a small amount of indol in the presence of considerable amounts (4 per cent.) of glucose.

Bearing these factors in mind we can briefly consider the clinical conditions in which I have tried this method, or seen it tried. In these infections the bacteria are carrying on their existence outside the body—that is, on the skin or mucous membrane, and not in the tissues themselves. In a sense these conditions are analogous to the "carrier" states with which we are familiar in certain other diseases, notably in meningococcus and diphtheria infections.

Bromidrosis.—This is a condition of stinking sweat, which, as I have shown, responds rapidly to the local application of glycerin.[1] I have as yet had only one opportunity of treating a case with glucose, but in this instance it was effective, as in those cases treated with glycerin.

Ozaena.—This condition of fetid rhinorrhoea is in most cases due to a massive infection of the nasal mucosa with a specific organism, the principal characteristic of which, as far as we are concerned here, is that it grows very freely in neutral broth, producing much indol and a very foul smell. It grows with difficulty in acid broth (+ 30 and upwards) and there is no smell and no production of indol. It grows fairly well in 4 per cent. glucose broth without any smell, and with a gradual production of acidity, and in this culture, as in the acid cultures, it rapidly dies out. A considerable number of cases of this condition have been treated by Mr. C. H. Hayton at my suggestion both with glycerin and with glucose, by swabbing over the mucosa of the nose once or twice daily with a 25 per cent. solution, with the result that the secretions of the nose have become acid, and the specific bacilli have been to a large extent, in some cases completely, killed out, and replaced by staphylococci and streptococci, the foul smell and the incrustation of the nose clearing up concurrently. I am at present only vouching for the principle of this method of treatment, which seems to hold the elements of success. The final results as to permanency of cure or mere alleviation of symptoms in these cases we hope to embody in a later paper. At present glycerin has given the better results, probably on account of its special physical properties; but it is difficult to obtain.

Chronic Otorrhoea.—Mr. Hayton tells me that he has treated several old-standing cases of this condition with success. Others who have tried the method in these cases say that they have seen no improvement. Obviously the mechanical conditions here may be totally different from those met with in a mere mucous membrane infection.

Chronic Vaginal Discharge.—At the Tottenham venereal clinic, in conjunction with Mr. E. Gillespie and Mr. F. L. Provis, I have had the opportunity of observing and treating a number of cases on this principle. Most of them were long-standing instances of persistent discharge not reacting to disinfectant douches. Some were known to be of gonococcal origin, in some there was no proof that they had had this infection at any time, and the condition seemed to be due more to the faulty anatomical conditions not uncommonly found in multiparae. The treatment was carried out by the patients themselves either by douching twice daily with a 25 per cent. solution of liquid glucose in warm water, or by the introduction nightly of a glucose pessary (25 per cent. glucose made up in a gelatin basis). We found in most cases that the purulent discharge rapidly diminished, in some cases it cleared up completely, and the vaginal secretions resumed their normal acid reaction. We are not prepared to assert that the condition can be cured by this means; some cases have relapsed after being clear some months since discontinuing treatment, some have not at present relapsed, but in any case to assert a

positive cure of a gonococcal condition is extremely hazardous. Moreover, in those cases where the anatomical conditions remain abnormal there must necessarily always be a tendency to an abnormal bacterial flora on the mucosa. Two things, however, admit of a positive statement: (1) That the patient's comfort has been increased by the diminution of the discharge; (2) that the normal acid reaction of the vagina has been restored.

In these infections of a mucous surface which, as I have said, seem to be analogous to certain other "carrier" conditions, it is highly probable that the likeliest means of cure lies, not in attempting to kill off the invaders completely lest some few escaping the killing process might find the place swept and garnished for them, but rather in attempting to restore the mucous surface to a condition in which its normal bacterial flora may multiply, and in course of time take entire possession of the field again.

In connexion with the treatment of vaginal discharge by the method advocated here, all one wishes to lay stress on is the fact of the diminution of the discharge; this most likely, though not absolutely certainly, marks a step in the right direction. Further work must show how this is effected; whether the mere acidity prevents the migration of the leucocytes through the mucosa, or whether the bacterial products that entice them out by their positive chemiotactic influence are not formed in the presence of the glucose medium I have not myself determined at present.

It needs only to be repeated that, in this as in any other form of treatment, one factor that is bound to condition success is a certainty that the medicament actually reaches the site of the infection.

REFERENCE.
[1] *Lancet*, December 5th, 1914.

THE INTRAVENOUS INJECTION OF EUSOL IN CHRONIC ARTHRITIS.

BY
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It occurred to me that the chronic infections causing arthritis might be benefited by the intravenous injection of eusol. Fourteen cases have so far been treated; of these six were very much improved, four improved, and four were not affected. In a chronic complaint such as this it is very difficult to weigh the evidence as to the cause of the result obtained. There seems, however, little doubt that the improvement was in some of the cases directly due to the eusol.

An endeavour was made to get recent acute cases running a temperature and displaying evidence of toxic absorption. Some were, however, long-standing cases with an acute relapse. Cases are not sent to this hospital in the very early acute stage, when there is reason to think this treatment might be most beneficial. They were mostly cases that could not be classified as typically rheumatoid, and in which the source of infection was doubtful.

The solution used contains 0.5 per cent. free hypochlorous acid, and was prepared according to the receipt of James Graham, namely, 12.5 grams boric acid, and 12.5 grams chloride of lime are shaken up with 1 litre water, allowed to stand for some hours, filtered, and 8.5 grams of common salt added; dose, 100 c.cm.

CASE I.

R., aged 24, had had some pain and swelling of the right hand and wrist for six months, which spread to almost all the joints five weeks before admission. He was acutely ill in bed and was making no progress. He had irregular pyrexia up to 100°; a sore throat had started about the time of onset of the arthritis and had become much worse just previous to the time of the more acute attack. An attempt to cultivate an organism from the throat was not successful. The first injection of eusol improved his general condition very greatly. His throat was better by the next day and he began to eat for the first time for some months. He was given two more injections and made steady progress. On discharge his joints were all very much better; his right knee, however, contained fluid, but was painless. He could walk well with one stick. The temperature was normal.

CASE II.

P., aged 32, had had pain and swelling of ankles for at least four months, spreading to the knees, hips, back, shoulders, and hands. When admitted he was confined to bed, unable to stand or walk. The knees and ankles were swollen, and in the metacarpo-phalangeal joint of the right thumb there was crepitus on movement. He had fairly widespread acne about the face. After the first injection the acne almost disappeared and the pains were slightly relieved. After the second the pains were much relieved, the swelling went down, and the acne entirely cleared up. He had one more injection and was discharged very much improved. He walked with one stick and his temperature was normal.

CASE III.

Clara G. During two years all joints had become gradually affected. Three months ago the right knee and ankle became acutely affected. On admission all joints were typically deformed and tender. There was evidence of thinning and destruction of cartilage, and some bony outgrowths. The right knee was acutely flexed and very tender, the ankle was also very swollen and tender. A skiagram of the right knee showed typical changes of septic arthritis. She had had acne of the face for three months and some pyorrhoea. After two injections she was greatly improved; her pain had gone except on movement, and the acne was very much better. The improvement in general health was also very marked. Under an anaesthetic the knee was straightened and put on extension. Her temperature rose and remained up for several days, but came down after a third injection. She had one further injection a week later. On discharge she was beginning to walk a little, suffered very little pain, and movement was returning in all her joints, even her wrists which had before been apparently fixed. The temperature was normal.

CASE IV.

J. C., aged 29; duration twenty months, gradual onset, second acute attack seven months before. On admission he walked with great difficulty with a stick. Fingers, wrists, feet, and knees were very tender, swollen, and with very limited movement. His mouth had twice been carefully overhauled, and was apparently healthy. He had an irregular temperature up to 100°. After the first injection he was considerably and immediately relieved, and the next day was walking about without a stick, and was better than he had been for over a year. A second injection was given, the joints steadily improved, and the disease appeared for the time quiescent. He could only stay three weeks, and was advised to return in two months. On readmission, his improvement had been fairly maintained, except for three days, during which he had acute pain. His wrists were both swollen and tender, and the left was almost fixed. He was given four injections of eusol, and made steady progress. On discharge he could run, although clumsily; he had no pain, and had better movement at all joints, though these continued to be swollen. The temperature was normal.

The above cases all did very well; their improvement was immediate and definite, and apparently due to the treatment employed. The following two cases were quite uninfluenced by the injections:

CASE V.

Dorothy L., aged 19; duration eight months, gradual onset. Acute attack in bed until admission. All joints were very tender; there was great muscular wasting. She was very anaemic, and had slight irregular pyrexia. An organism was cultivated from the gums, and a vaccine prepared, but she did not appear to respond to it, and was decidedly not improving. After five doses she was given an injection of eusol (80 c.cm.). The temperature rose to 102°; ten days later she had a second injection, and the temperature rose to 103°. She afterwards appeared to make some progress, and complained less of pain; her general condition seemed better, but the temperature continued to be elevated. It was thought she might now be in a better condition to respond to vaccine treatment, and further doses were given, but without definite result. A third injection three weeks later met with no better result. On discharge her joints were a little less tender, but she was not able to walk any better, and the disease did not appear to have been checked at all.

CASE VI.

R. E., aged 35; duration five years. He had had more frequent attacks during the last two years, and had been ill the last nine months. On admission he looked pale, thin, and ill; the fingers and wrists were mostly affected; the joints were hot and turned slightly red when very painful. He had had artificial teeth for the last six years. The temperature rose to 99.4° at night. He was given four injections of eusol, but without any relief, and was then put on a stock streptococcal vaccine. He was finally discharged only very slightly improved.

These two cases were more typical of rheumatoid arthritis than any of the others. This is of interest, as other observers have found that cases of septicaemia due to streptococci have not responded to eusol so well as those due to other organisms.

The remaining cases do not afford any conclusive evidence; two more were very much improved on discharge, four were improved quite definitely, and, in addition to the last two given in detail, two more were not benefited. Those who have done well have shown this not only by an improvement in the joint conditions and in general

health, but in a steadying temperature, which has in some been very well marked.

As to the mode of action of eusol, it is obvious that the bactericidal effect must be very small. It has been shown that hypochlorous acid 1 in 2,000 serum is an effectual antiseptic, but to get that concentration about 300 c.cm. would have to be administered. In the acute cases published, in which recovery was undoubtedly due to its action, the amount was only 100 c.cm., and in one case 40 c.cm. Cordova has shown that eusol would neutralize ten lethal doses of diphtheria toxin when given in two doses, the first immediately after, and the second twenty-four hours after the injection. He also obtained similar results with tetanus toxin and with *Staphylococcus albus*. He concluded that it acted by delaying the development of bacteria and destroying their toxins, thus enabling the natural resistance of the body to assert itself, and suggested that this destruction of toxins may be in the nature of a protean coagulation. It is a moot point whether in cases of arthritis we are dealing with a toxaemia or a direct invasion of the joint by organisms, but many of the other symptoms, the general malaise, and wasting must be due to toxin action. If these can be stopped, the patient must be greatly helped, and perhaps may either find sufficient power of resistance in his own body, or may be in a fitter condition to derive benefit from vaccine treatment. The most suitable cases for this treatment will be cases with signs of chronic poisoning, as shown by the temperature, skin reaction, and general condition. Some definite improvement should be obtained the day after a dose has been given; if this cannot be definitely elicited the treatment should not be continued.

Memoranda:

MEDICAL, SURGICAL, OBSTETRICAL.

DEFORMITY OF STERNUM AND MALPOSITION OF VISCERA.

THE following is a brief description of a case of congenital absence or imperfect ossification of the body of the sternum with malposition of abdominal viscera. It occurred in a youth aged 18, who came before a National Service Medical Board for grading.

He appeared healthy except for diffuse pulsation over the precordial area. The heart sounds seemed quite normal, but on palpating the precordia the examining fingers dipped down between the sternal ends of the ribs on to the pulsating pulmonary artery or right auricle. No ensiform cartilage could be felt, but the manubrium sterni seemed quite normal in its articulations with the clavicle and first rib. Percussion revealed abnormal dullness on the left side extending downwards almost to the level of the umbilicus. On the right side normal liver dullness was completely absent. He was sent to the Lord Derby War Hospital for *x*-ray examination, and the report stated "Absence of sternum with malposition of viscera to the left side." Since then Dr. Fox of Warrington has kindly taken an *x*-ray plate of the condition, and this shows increased heart shadow to the left with greatly increased definition of the bodies of dorsal vertebrae owing to absence of the intervening sternum.

Warrington. J. S. MANSON, M.D.

TREATMENT OF FRACTURED FEMUR.

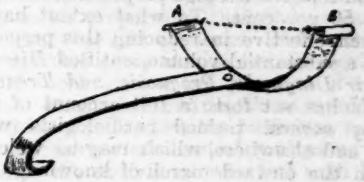
ONE of the chief difficulties in the treatment of a fractured thigh is to avoid posterior displacement or sagging at the seat of fracture.

To overcome this displacement I make a simple addition to a Thomas's knee splint, as shown in the accompanying illustration. This support is made of iron sheeting about one-sixteenth of an inch thick and one and a half inches wide. The upper end hooks over the ring of the splint, and the lower end over the two side bars.

The iron sheeting is strong enough to support the thigh without bending, and can be arched forwards to conform with the natural bowing of the femur. It is made of sufficient length to support the condyles of the femur without interfering with the movements of the knee-joint, and will admit of early movement of the knee-joint, especially when extension is taken by traction through the condyles of the femur.

This support can also be used with a Hodgen splint by making an extra transverse curve at the upper end instead of the hook.

The total length of the appliance is from nine to thirteen inches, as required. The distance from A to B will be



determined according to the size of the man's thigh; the depth of the curve below the line adjoining A and B will be two and a half to three inches.

J. H. C. FEGAN,
Captain R.A.M.C.(T.C.).

Reports of Societies.

CORRECTION OF BONY DEFORMITIES.

AT a meeting of the West London Medico-Chirurgical Society held at the West London Hospital on June 7th, Dr. A. J. RICE-OXLEY, the President, in the chair, Captain D. MCCRAE AITKEN gave an address on the correction of gross bony deformities of the lower limbs resulting from war injuries. The results obtained at the Military Orthopaedic Hospital, Shepherd's Bush, which he demonstrated by lantern slides and casts, were excellent, and bore testimony to the efficiency of the methods adopted. Captain Aitken dwelt on the necessity of allowing time for the hardening of callus before letting the patient walk without supporting appliances. Neglect of this rule resulted in gross deformities in limbs properly set at the time of injury. Delirium from intercurrent pneumonia or head injuries was no reason for neglecting the fracture, a statement which applied equally to all other intercurrent ailments. A suitable splint would permit of moving the patient bodily without disturbing the fracture. Early surgical interference was to be avoided until all inflammatory signs had disappeared, and to aid the process and improve the condition of the limb massage was meanwhile applied. Although so far sepsis had occasionally been lighted up by surgical interference there had not been any cause for serious anxiety. Fractures of the femur were put up in the abducted position with the knee extended, and traction made on the leg after reduction under an anaesthetic by strapping attached to the end of the splint. Captain Aitken held that the general alignment of the limb was the point to be considered, but that very good practical results could be obtained where, without surgical interference, the alignment of the bone could not be made perfect. He described the reversed bone-wedge method of dealing with injuries in the neighbourhood of joints whereby shortening of the limb was obviated.

Mr. TYRRELL GRAY, while accepting most of the views expressed by Captain Aitken, could not agree that the danger of lighting up septic foci was slight, and thought this militated against the reversed wedge method. In similar cases he would prefer a simple osteotomy above the injury. Major JOCELYN SWAN supported Mr. Tyrrell Gray's views about sepsis, and further criticized the method of putting up cases of fractured femur with the knee extended. He put up such cases with the knee slightly flexed, and applied extension to the knee by Beesley's callipers, to which a weight was attached. Dr. JAMES MENNELL pointed out that massage could neither light up nor disperse minute pockets of pus or latent septic foci. Any tenderness over the seat of fracture contraindicated walking exercise. The PRESIDENT and Mr. ASLETT BALDWIN and Mr. A. ROCYN-JONES also took part in the discussion.

Reviews.

DIAGNOSIS IN HEART DISEASE.

CLINICAL experience as a means of accurate diagnosis of heart disease has often been found wanting. Pathological findings have too often proved that the interpretation of morbid sounds has been fallacious, and some writers have even affirmed that the average proportion of error may be assessed at 50 per cent. To what extent have modern methods been effective in reducing this proportion? In the form of a substantial volume, entitled *Diseases of the Heart: their Diagnosis, Prognosis, and Treatment*,[1] Dr. F. W. PRICE has set forth a full account of the results achieved by several trained cardiologists working at Hampstead and elsewhere, which may be welcomed as a landmark in the onward march of knowledge. Much of the subject matter has already appeared in the form of isolated papers and addresses, and, in his preface, the writer makes due acknowledgement of his indebtedness to the labours of others. The introduction of the polygraph, by means of which it is possible to record simultaneous tracings of the heart, the artery, and the vein, has opened up new lines of study and has led to a more satisfactory explanation of the symptoms produced by varying morbid conditions.

Although the main object of the book is to record and explain the clinical value of instrumental observations, the writer has not ignored the value of older methods, nor does he entirely share the enthusiasm of some other observers as to the infallibility of the newer systems.

The primary test to which all cardiac cases must be put resolves itself into the simple question of integrity of function under strain. If the test indicates any departure from normal action, then instrumental investigation should be employed to detect the cause, and in a very large proportion of cases it is found to lie in some abnormality of the neuro-muscular structures of the heart wall. Special attention has thus been called of late years to the abnormal contractions of the auricle, known at the present time as auricular fibrillation and auricular flutter respectively. Persistent irregularity of action is the characteristic of the first of these, and paroxysmal irregularity of the second. Auricular fibrillation is regarded as a specific clinical condition which can be diagnosed with certainty. It is fully discussed and illustrated in a separate chapter. Irregularity may arise from many other causes. The introduction of the instrumental methods of diagnosis, and especially of the electro-cardiograph, which is also very fully explained and illustrated, has resulted in a form of classification which has led, and probably will lead still further, in the direction of effective treatment on rational rather than on traditional lines. The book presents a comprehensive account of modern knowledge of cardiology, and the author has taken pains to indicate the points upon which most competent observers are agreed as opposed to those about which there is difference of opinion. While he duly records such opinions, Dr. Price frequently manifests his own inability to share them. A very full index renders the work easy of reference, and as a whole it may be commended as a comprehensive guide both to diagnosis and treatment.

TUMOURS OF THE AUDITORY NERVE.

PROFESSOR HARVEY CUSHING'S monograph on *Tumours of the Nervus Acusticus and the Syndrome of the Cerebellopontile Angle*[2] is an intensive study of twenty-nine microscopically proved cases and of thirty-five probable but unverified tumours of the acoustic nerve. They are true nerve tumours, neurofibromas, neurogliomas or neurofibrogliomas, and may most suitably be spoken of as acoustic fibroneuromas. The tumour is composed of two kinds of elements, dense fibrous and loose areolar tissue with some of the characters of a glioma, and must be distinguished from other tumours arising in the cerebellopontile angle. Their usual origin is in the distal part of the nerve, probably from embryonic tissue rests, within the internal auditory meatus which may become dilated from absorption. The tumour extends into the cerebellopontile angle and eventually causes internal hydrocephalus. The patients, who would appear to be more often women than men, begin to suffer on an average about the age of thirty-four years, and come to hospital and operation some four years later. These patients are therefore older than those with other subtentorial lesions. The left acoustic nerve was more often affected, but in rare instances both nerves were implicated, usually, though not always, as part of a more or less widespread neurofibromatosis.

The symptoms occurred in the following stages: First, auditory and labyrinthine manifestations such as deafness, tinnitus, and vertigo; second, occipito-frontal pains, with suboccipital discomfort; third, inco-ordination and instability of cerebellar origin; fourth, evidence that the adjacent cerebral nerves are implicated; fifth, indications of increased intracranial pressure with choked disc and its consequences; sixth, difficulty in swallowing, awkwardness in articulation; and, finally, cerebellar crises and respiratory embarrassment. Nearly all the symptoms, except those due to the auditory nerve, may vary from time to time in a much greater degree than in the general run of cerebral tumours.

The clinical diagnosis can be made with reasonable certainty only when auditory symptoms definitely precede the evidence of implication of other structures in the cerebellopontile angle. The differential diagnosis is fully considered, and the surgical treatment by a "cross-bow incision," which gives a bilateral cerebellar exposure, is described in detail.

This original study of clinical and pathological material has been carried out on the same lines as the brilliant author's well-known work on the pituitary, and, like it, marks a definite advance in knowledge.

RADIOLOGY.

MORTON'S *Textbook of Radiology*[3] has now reached a second edition. In all its main features it is essentially unaltered, but certain revisions of the text have been made, it has been expanded by some fifty pages, and the number of plates and illustrations considerably increased. Quite one-half—the first—is given up to a description of the apparatus required for *x*-ray work; the second half deals with the various conditions in which radiography is valuable, and describes the technique to be used in order to obtain successful results. The subject of *x*-ray therapeutics is compressed into one chapter of twenty-three pages at the end which deals mainly with the action of *x* rays, the methods of measuring dosage, and the theory of filtration.

The illustrations of apparatus are good, but those of radiographs used to indicate various pathological conditions are uneven, and hardly come up to the standard which is desirable. Those of the stomach after an opaque meal are—even allowing for the loss of detail in reproduction—for the most part unsatisfactory, and fail to indicate the modern possibilities of this method of demonstrating various pathological conditions of this organ.

The author states in his preface that his aim has been to produce a guide to those taking up radiography for the first time; with this in view he has been content to indicate conditions most commonly met with in which an *x*-ray examination is essential, and has devoted a considerable portion of his book to apparatus, and especially to the state of the *x*-ray tube. Recognizing this, it may be said that he has produced a book which forms an admirable introduction to the subject, and one which should be useful to a beginner.

NOTES ON BOOKS.

ERRORS and defects of movement after war wounds have exercised, and will continue to harass, those who have them in hand till the last pension has been paid. The earlier our ideas of the underlying physics of defective movement are put upon a clear basis the better, and there

[1] *Diseases of the Heart: their Diagnosis, Prognosis, and Treatment by Modern Methods.* With a chapter on the Electro-cardiograph. By Frederick W. Price, M.D., F.R.S.Edin. London: H. Frowde, and Hodder and Stoughton. 1918. (Demy 8vo, pp. 472; 245 figures. 21s. net.)

[2] *Tumours of the Nervus Acusticus and the Syndrome of the Cerebellopontile Angle.* By Harvey Cushing, M.D., Professor of Surgery at Harvard University. Philadelphia and London: W. B. Saunders Company. 1917. (Roy. 8vo, pp. 296; 262 figures. 21s. net.)

[3] *A Textbook of Radiology (X Rays).* By E. R. Morton, M.D., C.M. (Trin. Tor.), F.R.C.S.Ed., etc. London: Henry Kimpton. 1918. (Demy 8vo, pp. xvi + 264; 93 figures; 36 plates. 10s. 6d. net.)

is no tongue better fitted than the French to call in aid. It is to be feared, however, that Professor BROCA, with all his reputation, has not quite succeeded in the volume he contributes to the well-known Horizon Collection.[4] His diction does not lend itself easily to English eyes, though we can well believe that English ears, which, after all, are proper to the purpose, could they be employed in his clinique, would find much to profit by. The first part of the book deals with ankyloses, true and false, their origin, diagnosis, and treatment. The second part discusses non-articular lesions; cicatrices and muscular lesions, with consideration of alterations in the length, direction, and line of action of the long bones in their capacity as levers; it deals also with vicious callus and with false joints. The teaching is sound but not very enterprising.

Professor HARTMANN'S lectures at the Hôtel-Dieu on war wounds and their immediate complications[5] were delivered in the 1916–17 session, and, as might be expected from a teacher of his eminence and experience, afford a clear survey of the then state of opinion as to treatment. They will have a certain interest to the future historian of the evolution of practice during the war period, and doubtless were of high value in the education of his pupils, but at this moment it is inevitable that a hint of the out-of-date should insensibly creep over the reader. The advice seems of yesterday, and yesterday is already with the seven thousand years. The professor, however, rescues from the past some forgotten observations of no little interest, notably Larrey's description of trench foot, which leaves little to be added to-day.

[4] *Troubles Locomoteurs consécutive aux Plaies de Guerre.* Par Aug. Broca, Professeur à la Faculté de Paris. Paris: Masson et Cie. 1918. (Cr. 8vo, pp. 155; 33 figures. Fr. 4.)

[5] *Les Plaies de Guerre et leurs Complications Immédiates.* Par Professeur Henri Hartmann. Leçons faites à l'Hôtel-Dieu. Paris: Masson et Cie. 1918. (Roy. 8vo, pp. 203; 58 figures. Fr. 8.)

MEDICAL AND SURGICAL APPLIANCES.

A Modified Rigid Stethoscope.

LOUIS LOWENTHAL, M.D. (Hampstead), writes: For some time past I have been using the monaural stethoscope, which I have modified in such a manner as enables me to hear through it with both ears at the same time. The instrument consists of an ordinary monaural stethoscope in two parts, to which is attached a piece of indiarubber tubing about 16 in. in length. This is connected at the earpiece and communicates with the bore; at the free end of the rubber tubing is a comfortably fitting earpiece. When in use the small free earpiece is inserted into the ear furthest away from the examining side. The stethoscope is placed in position on the chest and used in the ordinary manner. The advantages of this instrument over the single stethoscope are that both ears are engaged, and the examiner can better concentrate his attention since extraneous sounds are prevented from reaching the otherwise unused ear. I have found it especially useful for examination of the heart; the sounds, both normal and pathological, are clear and distinct, being carried direct to the ear through the short, straight stem. Messrs. Allen and Hanburys have designed for me the pattern which I use.

THE FUTURE OF THE MEDICAL PROFESSION UNDER A NATIONAL HEALTH MINISTRY.

THE discussion on this subject at the Royal Society of Medicine was concluded on June 5th.* Sir RICKMAN GODLEE was in the chair.

Sir BERTRAND DAWSON said that Sir Watson Cheyne and others had suggested that for the present the profession should confine itself to advocating a Ministry of Health, but that he considered would be an extremely unwise course to pursue. By all means let the need for such a Ministry be urged, but the success of the profession in the future would depend, not only upon the establishment of a Ministry of Health, but upon the policy pursued by that Ministry. The Insurance Act aimed far too much at securing the profession's material interests, and in consequence disregarded too much its ideals; that mistake must not be repeated. One of the first objects of a Ministry would be to co-ordinate a large number of existing departments, two of which would be chief, namely, the Local Government Board and the Insurance Commissioners. These two bodies represented very important interests, but it was desirable that the Ministry should represent a balance of professional interests, including ordinary general practice, various organized public services, academic medicine, and research, as well as the work gathered under the two Government departments mentioned. The term "state service" was a bogey to some, but there was nothing new in state service, and it was, indeed, because the existing state service had become so ungainly in its proportions that the necessity for reorganization had become apparent. He believed that a whole-time salaried state service for all would ruin the profession; it would remove the stimulus of rivalry, lead to intellectual stagnation, and medicine would become a machine without a soul. But the profession could equally be crushed by having mechanical routine so heaped up around it that the individual was left with little opportunity to exercise his personal initiative or to put his soul into his work. While it was still too early to think out schemes in detail, it was evident that there must be (1) an approximation between preventive and curative medicine, both from the point of view of education and organization; (2) encouragement to the general practitioner by way of the provision of fabric and equipment; (3) the development of institutional treatment. He favoured a system of part-time service.

Dr. CHARLES BUTTAR asked why the profession should press for a Ministry of Health. Was it on account of some supposed benefit the profession would derive from the existence of one King Stork instead of many King Logs? Would they leap into the millennium, or would they not find that the more these things changed the more they remained the same? The failure of the Insurance Act and other attempts at state control was due to the existence of a certain number of free and more or less independent practitioners who refused to put themselves under such control, and this section would always have to be reckoned with. His own view, perhaps an unpopular one, favoured the full encouragement and development of voluntary methods, as against either a complete system of state control which would extinguish the voluntary principle, or a partial system on the lines of the Insurance Act. A large measure of organization and co-ordination could be secured on voluntary lines. He wished to see a small body of men formed, representing the Royal Colleges, the Universities, and the British Medical Association, to discuss the proposals and elicit the collective opinion of the profession as far as possible; but above all to guide the medical profession in a statesmanlike way with regard to its future.

Mr. V. T. GREENYER said that the public must be satisfied whether the profession was or not, and he foresaw difficulties under a state scheme owing to the section of people who would feel themselves "above" the ordinary state *clientèle* of the practitioner. He hoped that the public would help the profession to maintain its freedom.

Dr. J. D. CREE thought that a matter in which the practitioner might have state assistance was that of difficult diagnosis, and this could be forthcoming under a system of complete notification.

Dr. C. THACKRAY PARSONS dealt with the reform of the Poor Law medical service; and Dr. BENJAMIN MOORE reiterated his plea for state service, which he said should not be obscured by any question as to method of payment.

Major GORDON DILL, replying on the whole debate, said that the people who were averse from any change were ignoring the facts of the situation; they disregarded the great revolution which had been going on for many years and had found issue in the Insurance Act. The conditions of medical service would never again be what they had been in the past. As to a state medical service, nobody had suggested the idea of a state service *ab initio*; there were already services of the state in which the majority of practising medical men were engaged. Some had spoken as though a state service meant a service organized and controlled by outsiders; he trusted that whatever was done the organization and control would remain in the hands of the profession.

On the motion of Dr. THACKRAY PARSONS it was agreed:

> That this meeting, the third at which the future of the medical profession under a Ministry of Health has been discussed, request the Council of the Society to appoint a small watching committee to consider the progress of the question and report to the Council from time to time.

* For reports of the previous meetings see BRITISH MEDICAL JOURNAL of April 20th, p. 456, and June 8th, p. 653.

THE MEDICAL PROFESSION UNDER THE MILITARY SERVICE ACT.

THE Central Medical War Committee has issued this week a letter to the honorary secretaries and chairmen of Local Medical War Committees in England and Wales, dealing with the duties of the local committees and the ways in which their co-operation is desired in order that the new calls on the medical profession may be made with the minimum of hardship to the profession and of inconvenience to the public. It is pointed out that the local committees will continue to advise the central committee both in its tribunal capacity and in respect of its other duties, the Ministry of National Service recognizing that the system which has been gradually built up depends for its efficiency on the cordial co-operation between the central and local committees.

The Central Medical War Committee, acting as the formal medical tribunal, will deal with all claims for exemption from combatant service. The grounds upon which application may be made were given in full in the JOURNAL of June 1st, p. 622. All registered medical practitioners are liable to military service if:

(*a*) On the 18th April, 1918, they had not attained the age of 56.
(*b*) They are male British subjects.
(*c*) They have at any time since the 14th August, 1915, been in Great Britain; and
(*d*) They are not for the time being within the exceptions set out in the First Schedule to the Military Service (No. 2) Act, 1918.

The exceptions relate to men ordinarily resident in the Dominions abroad, members of the Forces, certain disabled men, certain rejected men, and men in Holy Orders or regular ministers of any religious denomination.

Any doctor who as an ordinary citizen fails to establish a claim to a special form of exemption on the ground of exceptional personal hardship or ill health, or of conscientious objection, will be given conditional exemption on the terms of the proviso to Regulation 24 (see p. 622). This, which is styled "standard exemption," will hold good unless and until he is offered a commission, the essential condition being that he will, if and when required, undertake such professional work as the Director-General of National Service, after consultation with the medical tribunal, may offer him. The desire of the Central Medical War Committee is to secure that as large a number as possible of the members of the profession who come under the new Act shall accept this standard exemption, leaving the question as to whether they ought to be allowed to remain where they are, or to take a commission, or to undertake civil work elsewhere, to be settled later when the circumstances of each area are reviewed. A man who takes the exemption offered to him will be in exactly the same position as the great majority of those who apply for a higher grade of exemption, since it seems unlikely that more than a very few absolute exemptions can be granted.

The object is to put all the men concerned on the same footing, leaving the question of their future use to be dealt with in consultation between the central and local committees. Each individual will subsequently have an opportunity of being heard by both the local and central committees before any decision is reached as to the disposal of his services. In order to meet immediate military requirements it will be necessary in some areas to make a call for military service at once on eligible men of the class just over the former military age. The committees affected will receive due notice, and the doctors concerned will be dealt with in accordance with the new Regulations.

The ordinary procedure will be on the following lines:

(*a*) Doctors liable to military service will be examined medically by special travelling National Service Medical Boards.
(*b*) Meanwhile the Local Arrangements Subcommittee of the Central Medical War Committee will be considering from what areas doctors can be spared either for commissioned service with the forces, or for substitution work in civil practice, if and when required.
(*c*) The men under 56 in the areas selected will receive fourteen days' notice under Regulation 17 in order that they may if they choose exercise their statutory right to apply for exemption. With this will be sent a "certificate of protection" issued by the Ministry of National Service, identical in terms and effect with the "standard exemption" referred to above.
(*d*) Applications for an exemption different from the standard form will be heard by the medical tribunal.
(*e*) Simultaneously the Local Arrangements Subcommittee will continue its correspondence with the local committees and investigation into the circumstances of the areas.
(*f*) From the men neither rejected on physical grounds nor granted on personal grounds exemption different from the standard exemption, the local committee will select those who in its opinion can be most easily and suitably spared from the area. The process will be analogous to that adopted during the past two years, the only difference being that a doctor who can be spared from his present work may be used for other civilian duties instead of receiving a commission.
(*g*) Doctors not satisfied with the recommendation of the local committee on their cases, or with the provisional decision of the central committee, will be heard if they so desire. At this hearing all relevant circumstances will be taken into consideration.

The object of this procedure will be to build up a reserve of doctors who are known to be available either for military or civilian work, and this reserve will be drawn upon as and when required. In order that the best use may be made of the men thus made available, all facts bearing on their aptitude, circumstances, and wishes will be noted during the various hearings and investigations.

There is thus no need for an individual doctor to take any action until after he has been medically examined, and not even then until he receives the fourteen days' notice from the Ministry of National Service, together with the certificate of protection which will be offered to every man. He need only take action then if he thinks his circumstances are so exceptional as to be likely to obtain something different from the standard exemption.

The above procedure is based on the assumption that plans must be laid for the possibility of a long war. Hence no idea can be given of the number of men between 43 and 56 who may have to be disturbed. But there is no intention of taking older men if, other things being equal, younger men are available; nor is there any intention of moving men for the sake of moving them. The aim of the central committee will be to disturb as few men as possible. How far this can be achieved will depend largely upon the extent to which arrangements can be made in urban areas for the release of men by a radical revision of the present conditions of practice, such as the institution of central surgeries, the pooling of practices, and the moving of doctors from one part of the town to another. In some cases it will be necessary to move doctors from one area to another, but this method will, for the most part, only be adopted when the central and local committees are convinced that in no other way can the men needed be released for military service.

In our article on this subject last week (p. 647), it was pointed out that where the ground of exemption is occupational the medical tribunal will be able to grant conditional exemption only. In this connexion it may be well to note that a recent Order by the Minister of National Service withdraws certificates of exemption from military service held wholly or partly on occupational grounds by men of various ages employed in a large number of occupations who are in medical categories A, B 1, and C 1, or Grades 1 and 2, or who have not been medically examined. Men thus "decertified" have no right to apply to a tribunal for renewal of exemption on occupational grounds, and their employers cannot make such an application on their behalf. Medical men are thus not alone in being unable to make individual application for exemption from military service on occupational grounds—that is, grounds of national interest.

With regard to the financial arrangements for substitute civilian medical service, the statement now being issued by the Ministry of National Service to medical practitioners, which was outlined in our last issue at p. 651, definitely says that the medical man "may confidently assume that he will not be required to abandon his own work for such service except upon terms of remuneration not inferior to those of commissioned service in the Royal Army Medical Corps." We understand that the financial aspects of national service for medical practitioners are being closely studied by a special subcommittee of the Central Medical War Committee.

THE President of the Republic of Cuba, on the proposal of Dr. Mendez Capote, Director of Public Health, recently signed a decree making compulsory the hospitalization of all sufferers from malaria who are unable to bear the cost of isolation. Foreigners refusing to submit to this ordinance will be expelled from the island.

AT the fourth National Medical Congress, recently held at Havana, it was decided to form an anti-venereal league in Cuba. At the same meeting resolutions were passed urging the formation of a league against malaria, hookworm disease, and rural typhoid. The work will be carried out under the direction of a committee of management comprising the leading bacteriologists in Cuba. The league will have an official organ, entitled *El Eco Científico*.

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THE INTER-ALLIED SCIENTIFIC FOOD COMMISSION.

THE Inter-Allied Scientific Food Commission now sitting in London has already at previous meetings accomplished a good deal of work, and if its recommendations are carried out, the provisioning of allied countries will be placed on a sound scientific basis. That its recommendations will be carried out seems to be more or less guaranteed by the fact that it was established as a result of a decision of the Inter-Allied Conference held in Paris last November. The Conference directed that the inter-allied scientific commission should consist of representatives of France (Professors Gley and Langlois), Italy (Professors Botazzi and Pagliani), United States (Professors Chittenden and Lusk), and the United Kingdom (Professors E. H. Starling and T. B. Wood). It was instructed to meet periodically in order to consider from a scientific point of view the food problems of the Allies, and in agreement with the inter-allied executives to make proposals to the allied Governments. The Commission held its first meeting in Paris on March 25th, and its second in Rome on April 29th. Before its present meeting in London a representative of Belgium, Professor Hulot, was added. A memorandum upon the work of the Commission, furnished to us by the Food Controller, contains some particulars enlarging the information published in previous issues.

At its first meeting last March in Paris the Commission came to an agreement as to the minimum food requirements of the average man. It was laid down that for a man weighing 70 kilos, or 154 lb., doing average work during eight hours a day the food as purchased should have an energy value of 3,300 calories a day, but that a reduction of 10 per cent. could be supported for some time without injury to health. The Commission accepted the figures of Professor Lusk, one of the representatives of the United States, for the proportion to be assigned to women and to children at different ages. At the second meeting, in Rome, the metric ton (a metric ton is 0.9842 ton British) was adopted as the unit for estimating the weights of the various foods produced in each allied country. A "man value"—that is to say, the number of average men equivalent to the population of each of the allied countries—was established, and was taken as a basis for calculating the amount of food to be provided for the adequate nourishment of the total population of each country. An estimate was then formed of the home production of the soil furnished by each allied country in 1918–19 to serve as a basis for determining the amount of food available for men and animals respectively in each country.

It was not thought desirable to fix a minimum meat ration, in view of the fact that no absolute physiological need exists for meat, since the proteins of meat can be replaced by other proteins of animal origin, such as those contained in milk, cheese, and eggs, as well as by proteins of vegetable origin. It was, however, considered desirable to fix a minimum ration of fat; this it was decided should be 75 grams—about 2⅝ oz. per average man a day. It is to be noted that the fat ration may be made up from fats partly of vegetable origin and partly of animal origin, and the Commission expresses the opinion that if the amount of fat of vegetable origin was found to be insufficient it might be necessary to maintain a certain stock of animals to make good the deficit.

The Commission has recommended that the maximum possible proportion of all cereals except oats should be reckoned in when calculating the amount of calories available for man. As to milling, it has advised that a uniform extraction of 85 per cent. should be adopted in all the allied countries; this will vary from 80 per cent. in summer to 90 per cent. in winter, and will apply to the United States only as regards their internal consumption, and then only in case of scarcity. While man should always take precedence over animals in the allocation of food by governments, it is recognized that the methods adopted for reserving the maximum possible proportion of the cereals for the use of man may vary in each country. The opinion is therefore expressed that in fixing prices it is the prices of animal products which should be limited rather than those of such vegetable products as may serve equally well for feeding men and animals. The production of veal, pork, and poultry at the expense of other food immediately available for man should therefore be discouraged, and this may best be done by fixing prices for those animal products which will make it unprofitable for the producer to feed the animals on cereals. The chief subject now under consideration is the examination of statistics which will render it possible to ascertain the calorie value of the home production of each of the allied countries. The comparison of these figures with the needs in calories of the population of each country will enable the Commission to deduce the amount of imports necessary for the maintenance of the population, or the exportable surplus, as the case may be.

The Commission has also expressed the opinion that any propaganda having for its object the encouragement of food production and of economy in the use of food should be organized and directed by men of science well acquainted with the subject. The members of the Commission itself fulfil this condition, to the importance of which we had occasion some time ago to call attention, for this elementary principle was at first neglected in this country. It appears that the truth of this principle is beginning to be recognized in Germany, where voices are being raised in favour of consultation of scientific and medical experts by the authorities.

THE PARASITE OF ICTEROHAEMORRHAGIC JAUNDICE.

NOGUCHI[1] has continued his investigations on the parasite responsible for icterohaemorrhagic jaundice, formerly called Weil's disease, and finds that there are no differential features between the Japanese, the European, and the American strains. The Japanese observers, Inada and his collaborators, described the organism as a spirochaete with several irregular waves, the entire body being dotted with alternate bright and shadowy portions, and gave it the now widely familiar name of *Spirochaeta icterohaemorrhagiae*. Hübener and Reiter, who recognized these appearances, believed that the organism had a series of minute knots, and hence called it *Spirochaeta nodosa*. Noguchi's careful observations show that the organism differs morphologically and in resisting the

[1] Noguchi, H., *Journ. Exper. Med.*, Baltimore, 1918, xxvii, 575-625.

destructive action of a 10 per cent. solution of saponin from all previously described spirochaetes, and he therefore places it in a separate genus under the name *Leptospira icterohaemorrhagiae*. The creation of a new genus may also, it is thought, facilitate a more exact morphological description than has hitherto been possible, as the vague use of the term spirochaete has indiscriminately covered at least six large genera of spiral organisms.

It is interesting to note that Noguchi's discovery of the organism in rats in America, where the disease has not been established as occurring in human beings, has been recently paralleled in this country by A. C. Coles,[2] who recognized this infection in nine out of a hundred rats examined, and in Tunis by C. Nicolle. In these countries, therefore, epidemics of jaundice due to this cause may be anticipated —and, indeed, may have already occurred—but, so far, the proof has not been established by the discovery of the organism.

Noguchi has also examined the cultural conditions of the organism, and finds that an animal or human serum is essential, but that the cultural value of different animal serums varies very considerably; that the reaction of the medium is an important factor, the most favourable being a slight degree of alkalinity; that the organism is an obligatory aërobe; that it grows best at 30° to 37° C., but is unable to grow in urine and does not survive more than twenty-four hours unless the urine is neutralized or rendered slightly alkaline. The faeces of normal or jaundiced persons destroy the organism within twenty-four hours, and in polluted water and sewage it does not remain alive for more than three days. It is therefore improbable that the spirochaete can survive long after it leaves its host, and to explain cases of human infection in which the carrier rodents are not in contact with man, the question of insect vectors has been taken up by Reiter, who obtained negative results with certain biting flies, fleas, and bed-bugs, and by Noguchi, who found that the larvae and adults of the *Culex* mosquito, the larvae of the house-fly and the bluebottle, wood ticks, and leeches failed to become carriers when fed on infected guinea-pigs or their organs. There are therefore further points to be established about the life-history and spread of this spirochaete.

[2] A. C. Coles, *Public Health*, Lond., 1918, xxxi, 88-90.

THE RATE OF REFLEX NERVOUS DISCHARGE.

THE meeting of the Royal Society on June 6th was occupied in hearing and discussing an important paper by Mr. N. B. Dreyer and Professor C. S. Sherrington, F.R.S., on the brevity, frequence of rhythm, and amount of reflex nervous discharge as indicated by reflex contraction. The observations upon which the paper was founded arose out of an investigation undertaken for the Army Tetanus Committee, of which Sir David Bruce is chairman. The authors found that a single momentary stimulus of moderate intensity, such as a break-shock, even though not far above the threshold value of stimulation, applied to the afferent nerve of a spinal reflex centre, not uncommonly evoked from that centre a repetitive series of volleys of motor impulses. It tended to do so more as the stimulus, within limits, was increased in intensity, but the state of the reflex centre at the time was also a decisive factor. The rhythm of repetition of volley discharges from the spinal reflex centre was traced, by the ordinary mechanical method, to be of synchronous rate with that of stimulation of the afferent nerve, up to a frequence of 55 a second, and by a mechanical resonance method up to a frequence of 65 a second. By a "doubling frequency" method it was shown further that the frequence-rate of the reflex discharge had not reached its limit under a stimulation of 75 a second, but surpassed that degree, though by what amount the method did not show. The maximal mechanical power of a muscle contracting under spinal reflex action was frequently as great as the maximal which could be evoked from it by direct faradization of the motor nerve itself.

DIPHTHERIAL INFECTION OF WOUNDS.

A GOOD illustration of the great complexity of questions bacteriologists may be called upon to answer is afforded by a recent inquiry carried out for the Canadian Army Medical Corps with respect to the presence of diphtheria and diphtheroid bacilli in open wounds.[1] The inquiry was rendered necessary by the publication last September of a report by Majors Fitzgerald and Robertson, to the effect that out of 67 cases of open wounds in men returned from the Canadian Expeditionary Force examined in a particular division between May 20th and June 7th, 1917, no fewer than 40 afforded cultures of the diphtheria bacillus. The significance of the observation was somewhat discounted by the discovery that a nurse whose duty it was to dress the suppurating amputation cases had a slight wound of the index finger which yielded cultures of *B. diphtheriae*; she could not, however, be held entirely responsible for the outbreak because other instances of infected wounds occurred in soldiers who had returned to Canada after the nurse had been taken off duty. In two or three cases the infection was discovered in men immediately on their arrival in Toronto from overseas. Characteristic membrane formation occurred in certain of the cases, and in some the virulence of the bacilli isolated in cultivation was proved by inoculation. The fact that some of the cases afforded cultures of the diphtheria bacillus immediately upon arrival in Toronto made it essential to institute an inquiry in England to determine the frequency of the presence of *B. diphtheriae*, and incidentally of allied diphtheroids, in the wounds of patients in Canadian military hospitals. The inquiry was very laborious, but the result was reassuring. Only in four out of 306 cases examined were bacilli isolated having cultural characteristics of a true diphtheria bacillus, and of these four only two were virulent. On the other hand, in a considerable number of cases diphtheroid bacilli were isolated—that is to say, bacilli which morphologically resembled the true diphtheria bacillus. As long ago as 1888 attention was drawn to the fact that a Gram-positive bacillus which might easily be mistaken for the true diphtheria bacillus was frequently present in the throat and mouth. This was at first assumed to be an attenuated strain of the virulent germ, but when more refined bacteriological tests were brought into use in which the power of bacilli to ferment sugars was tested, it was established that this non-virulent bacillus was quite distinct from the true virulent bacillus, and it received the name *B. hofmanni*. Later on many other bacilli resembling the true diphtheria bacillus were found, and at least six groups of them distinguished. Morphologically, and in the early stages culturally, diphtheroid bacilli from wounds are many of them indistinguishable from *B. diphtheriae*, and in some instances they may have the same power to ferment sugars, so that it is not justifiable to make a diagnosis of diphtherial infection of wounds either from smears alone or from stained preparations and cultural characteristics. The demonstration that the bacilli produce toxins—ectotoxins—which can only be effected by observing the result of inoculation of broth culture, is alone capable of proving the presence of infection by the true virulent *B. diphtheriae*. There is a certain amount of evidence that particular species of diphtheroid bacilli characterize particular hospitals, but none that the diphtherial infection of wounds is otherwise than uncommon among the wounded.

[1] Adami, Bowman, Adams, Fleming, Farquharson, Imrie, and Janes, *Bulletin of the Canadian Army Medical Corps*, June, 1918

EPIDEMIC LETHARGIC ENCEPHALITIS.

PROFESSOR A. NETTER, who drew attention last March to the occurrence of cases of what he called lethargic encephalitis in Paris, has recently published[1] a fuller account of the subject. A number of similar cases have been seen by Professor Chauffard and other physicians in Paris and also in other parts of Northern France. The earliest cases in Paris were seen in March, and were diagnosed either as cerebro-spinal meningitis or as tuberculous meningitis. The chief symptoms were fever, somnolence, and ophthalmoplegia, so that the cases appear to belong to the same category as those observed recently in this country, and at first thought to be due to botulism. The patient at first either sleeps, or with difficulty resists the inclination to sleep, but at the same time is able to answer questions and to obey directions. Later on he becomes quite lethargic and unable to do anything, although he may wake up every two or three days to take food. Eventually the somnolence may deepen into coma. The lethargy may be varied by delirium or by convulsions, and the condition may last for weeks or months and be complicated by paralysis of sphincters and by bedsores. The commonest motor paralysis is ptosis of one or both sides, but squinting and even complete immobility of the eyes may be observed—symptoms which point to external ophthalmoplegia of nuclear origin. Loss of accommodation and of the light reflex may occur, and nystagmus is common. The paralysis may extend to the face, the palate, the tongue, the larynx, and the pharynx. There is no actual paralysis of the limbs, but often inco-ordination, trembling, or even clonus or contractures. Fever generally lasts only for a few days, and the diagnosis of encephalitis rests upon the absence (as a rule) of contracture, of Kernig's sign, of irregularity and slowing of the pulse, and on the fact that the cerebro-spinal fluid obtained by lumbar puncture is normal. The mortality Netter estimates at about 50 per cent., but some of the cases which appear most desperate recover. Examination of the brain reveals the lesions of diffuse interstitial encephalitis, which are those observed by Mott and others in sleeping sickness due to the *Trypanosoma gambiense*, though the cause, which has not yet been ascertained, of lethargic encephalitis must be different. Netter recalls an epidemic outbreak of a similar kind in Upper Italy and Hungary in 1890 to which the name "nona" was applied. Apparently cases of the same sort occurred in 1895 in many countries, including France, England, Germany, and the United States. The earliest record of an epidemic prevalence of such a disease appears to be that of an outbreak in Tübingen in 1712, which was called sleeping sickness, but though ocular paralyses were noted it is not clear that somnolence was present in the same cases. Netter gives a reference to an epidemic in Vienna in 1916–17 which appears to have presented all the symptoms of the recent cases. An inoculation under the dura mater of brain substance from one of the Vienna cases produced in a monkey a condition of somnolence which ended in death after forty-six hours. In this animal acute haemorrhagic encephalitis was present. Another monkey inoculated under the dura mater with an emulsion filtered through porcelain remained unaffected. These experiments were made by von Wiesner, who obtained cultures from man and monkey of a Gram-positive coccus; but these experiments do not seem to have been pursued. Netter rejects the suggestion that the condition is due to the same infection as produces poliomyelitis, mainly on the ground that in lethargic encephalitis the inflammatory lesions are interstitial and the cells are not involved. He also rejects the suggestion that it is due to food poisoning, and comes to the conclusion that it is a specific disease due to an infective agent not yet identified. As to treatment, he used hexamine, which is believed to have an antiseptic effect on the central nervous system, as shortly after its ingestion formic aldehyde can be found in the cerebro-spinal fluid. He also advises intraspinal injections of serum from subjects who have recovered from the disease, a method which he found useful in poliomyelitis.

[1] *Bull. de l'Acad. de Méd.*, T. lxxix, No. 18.

THE SOYA BEAN.

IN an article on the making of a vegetable milk from the soya bean published on April 13th, p. 430, it was said that though the bean grew freely in China, where it is indigenous, in Southern France, in Algeria, and in many parts of America, it did not take kindly to the English climate. We are informed by Mr. North, curator to the Royal Botanic Society of London, that the society has recently had so much success in growing the bean that it seems possible that its cultivation may become established in this country. Mr. North tells us that some 700 varieties are known in Eastern Asia and that one has been found which apparently flourishes here as well as in its own country of Manchuria. From an article in the *Botanical Journal* for March, 1918, we learn that the bean was brought to England in quantity for the first time in 1908, and that in the following year experiments were made at the instance of the Board of Agriculture with sixteen varieties obtained from Japan. The experiments failed because, though the plants grew well, they formed no flower. In 1910 seed was obtained from Manchuria, and some of the plants formed seed at the Cambridge University farm. When resown in 1911 the crop made little growth, and no seed was produced. Another experiment in the same year with a variety known as "early Tennesse," obtained from Quebec, was also considered to be a failure. In 1913 the Royal Botanic Society took the matter up, apparently as a consequence of a visit from the agent of a German cultivator, who wanted to form a syndicate to grow the bean. Later a dried specimen of a plant of an acclimatized race was supplied by the German agent, but all the seeds had disappeared from the larger pods; however, from several small pods thirteen seeds were obtained, which in the following season yielded plants bearing 440 seeds. From this small beginning the society succeeded in raising its stock to over 12,000 fully developed seeds. This year the plant is being grown under crop conditions in several places, and the Board of Agriculture and the Ministry of Food are interesting themselves in the experiment. The object in view is not to produce a vegetable milk, but to afford a new source of oil supply in this country. The bean, it is said, has been cultivated in China for 4,700 years, and the production of oil from it is among the most important industries of Manchuria and Japan. The residue is made into bean cheese and bean cakes, which are used for feeding cattle. The beans and products made from them have in fact become important articles of commerce. The fresh expressed oil may be used in soap-making without further preparation, and it is owing to its value in the manufacture of soft soap that it has hitherto been of commercial importance in Europe. The average percentage composition of the bean is stated to be oil 18, albuminoids 40, carbohydrates 22, cellulose 5, ash 5, and water 10. The amount of oil is higher and the albuminoids and carbohydrates lower than in the analysis we published, and it is probable that the amount of fat there given as contained in the vegetable milk was too high. In Japan the soya bean is also used for making certain condiments by submitting the beans to a kind of fermentation. At one time soy was largely imported into this country from China, and it was one of the condiments Byron recommended his fellow countrymen to take to Rome if they did not wish to starve during Lent. Whether there is any considerable importation of soy condiment at the present day we have not been able to ascertain. We are informed that a plot has

been sown this year in the gardens of the Royal Botanic Society, Regent's Park, under the direction of the council and the honorary treasurer, Sir Malcolm Morris.

THE FOOD OF THE ROMAN SOLDIER.

THE diet of the Roman soldier was on a scale very far below the liberal rations deemed necessary for modern armies. Readers of Caesar's *Commentaries* know how careful he was in all his campaigns about the *res frumentaria*. Till the period of the Roman Empire the legionary made his own bread. He roasted his ration of corn, ground it in a handmill or between two stones, then kneaded the flour into a paste with a little water, and cooked it in an oven improvised with a few tiles. He also made of it a strong vegetable soup, something like the old English frumenty (wheat boiled in milk). On this food, says Edmund Alexander Parkes, the Roman soldier marched and conquered as men of no other race have done. Sometimes, as a punishment, the ration of wheat was replaced by barley, which by the ordinary Roman was left to slaves and animals. On campaign the legionary had, in addition to his corn, a ration of meat when it could be got. Strict generals like Scipio insisted that the meat should be simply boiled or roasted without seasoning and eaten without sauce. But just as the Romans learnt the use of some weapons from their enemies, so they got from them certain culinary recipes. Thus they borrowed two kinds of sausages from the Lucani and the Falischi. The only drink allowed the Roman soldier was the *posca*, a mixture of vinegar and water, such as was given in a sponge fixed on a reed to Christ when hanging on the cross. Wine did not come into general use till the period of the Empire.

SANITATION IN INDIA.

THE task of the sanitary medical officer in India is so gigantic that sometimes it may well cause discouragement. He has to deal not only with a population very fixed in its ancient ways and with diseases common in this country, such as tuberculosis—which is, perhaps, as frequent in India as in England—but with tropical diseases such as malaria, kala-azar, dysentery, and sometimes cholera. Encouragement may be drawn from the results obtained by the medical administration of Indian jails. The initiation of the work was due to a minute made by Lord Macaulay in 1835, but the first administrator who took in hand the sanitary reform of jails in India was Surgeon James Hutchinson of the Bengal Medical Service; he published a book on the *Medical Management of Indian Jails* early in 1835. It appears from a paper by Lieut.-Colonel Mulvany, published in the *Indian Medical Gazette* last year, that the death-rate from all causes in the Bengal jails in the five years ending 1847 was 75 per 1,000; in the five years 1878–82 it was still 74 per 1,000, but since then there has been a steady improvement, until in the five years ending 1917 the rate was only 20 per 1,000, and Colonel Sir W. J. Buchanan, K.C.I.E., the Inspector-General of Prisons in Bengal, is able to report that in 1917 it was only 15.8. There has also been a steady decline in the death-rate from cholera. In 1883 it was 5 per 1,000, in the five years ending 1917 it was 0.3 per 1,000; in fact, cholera, once a terrible factor in prison mortality, has for the last dozen years or so ceased to have any very notable influence on the mortality rates. A certain number of cases among newly admitted prisoners must always be expected, but through the establishment of quarantine wards in every jail the disease is prevented from spreading to other inmates.

THE "SUGGESTION" FACTOR IN TREATMENT.

IN all medicinal treatment, however appropriate and however active, there is a certain dose of "suggestion," which is not without its effect on the results. This is especially true of the treatment of chronic diseases, in which the curative effects of drugs are not forthwith apparent. This "suggestion" only lasts for a certain period, which has been calculated by an ingenious French physician to be about three weeks. If no change be made after the lapse of this period the patient's hopes begin to falter and he loses confidence. Now, it is well within our means to continue the treatment in principle while varying the particular mode of application, and by shuffling the cards, so to speak, by altering the form of the treatment and rearranging the scheme, we can imbue the sufferer with the pleasing conviction that he has accomplished one stage and is now entering on a second. This may sound trivial, but therapeutic success is largely dependent on small details. It is an essential part of the programme to foster the patient's hopes and maintain his courage by devices which, though hardly scientific, may yet help him. Take such a disease as phthisis, for example. There are several well-thought-out methods of treatment which, in favourable cases, make for recovery. These methods comprise physiological factors that constitute the basis of therapeusis along with others which, like the vehicle in a mixture, are so useful as to be almost indispensable. Prolonged treatment must be monotonous, and this very monotony in the long run militates against its success. It does not require very much ingenuity to obviate this drawback. We are familiar with the remarkable effects of any new treatment of a chronic disorder if only it be applied by someone who enjoys the patient's confidence. The buoyancy begotten of hope stimulates the circulation, and individual symptoms for the time being attract less attention, so that the general effect is one of "feeling better."

THERAPEUTIC USES OF SUGAR.

AN Italian physician, Professor Lo Monaco, has recently stated that remarkable results have been obtained in tuberculosis by the intramuscular injection of solutions of cane sugar. He injects, with proper precautions to ensure antisepsis of the skin, 5 grams of saccharose dissolved in 5 c.cm. of sterilized distilled water. This quantity is given daily in one or two intramuscular injections. It is said that after three or four days the temperature falls, night sweats cease, the cough is very much lessened, and the amount of expectoration greatly diminished. It is stated by *Le Journal* that the method is to be tried at the French sanatorium for tuberculous soldiers at Bligny. The results of this trial will be awaited with interest, for the effects claimed are rather astonishing. We have not been able to find any previous record of the administration of sugar by intramuscular injection, but sugary solutions have been used by hypodermic and intravenous injection chiefly to produce diuresis, and in place of saline injections in various toxic conditions. Their use has been condemned in Bright's disease and in arterial hypertension. Occasionally febrile reaction has been observed, and this has been attributed to the existence of latent tuberculosis in such cases. According to a recent note by Dr. G. Lyon,[1] an artificial serum containing sugar was first used by Hédon, Arrous, and Jeanbrau at Montpellier; but most of the recent work has been done by Fleig, who has prepared a number of formulae, and has suggested the addition of sugar to the ordinary saline injections. Most of the formulae direct the use of glucose, though lactose as well as saccharose has also been added. The use of a solution containing both glucose (3 per cent.) and sodium chloride (0.24 per cent.) has been suggested. An isotonic solution of saccharose is obtained by using 9.25 per cent. of pure crystallized cane sugar in distilled water; a hypertonic by using 30 per cent. As sugar has a nutritive value it has been suggested that when it is necessary to instil

[1] *La Press Médicale*, 1918, No. 20.

a saline injection during an operation it may be well to replace it by a glucose solution, with or without the addition of adrenalin (10 drops to the litre).

THE WAR HOSPITALS PROVIDED BY THE BOARD OF CONTROL.

AMONG the members of the medical profession who have received the honour of K.B.E. is Dr. Edward Marriott Cooke, chairman of the Board of Control, and we may take it that this honour is in recognition of the work done in connexion with the utilization of asylums as war hospitals. Sir Edward Cooke has been largely concerned in the initiation and development, on behalf of the Board, of this scheme, under which, by the conversion and adaptation of some sixteen county and borough asylums, a like number of large and well-equipped war hospitals have been formed, providing rather more than 26,000 beds; in them more than 300,000 sick and wounded soldiers have already been treated. In carrying this scheme through the Board of Control have had the cordial co-operation of the visiting committees, medical superintendents, and staffs of the whole of the county and borough asylums in England and Wales. Without this ready help the scheme could not have matured, and it is worthy of mention that, as respects the asylums offered to the Army Council, the services of every member of their staffs were taken over, and that these have proved of great value to the military authorities.

WE regret to announce the death of Mr. L. A. Dunn, senior surgeon to Guy's Hospital. An obituary notice will appear in an early issue of the JOURNAL.

Medical Notes in Parliament.

National Service Medical Boards.—Upon a question by Sir H. Nield as to whether the constitution of medical boards for examining recruits in the London district and elsewhere had been altered, Mr. Beck stated, on June 10th, that it had been found necessary to increase the number of acting National Service Medical Boards in certain districts. It was expected that it might become necessary, in cases of urgency, for temporary emergency boards to consist of two doctors. He was glad, however, to say that it had been found possible to avoid the need of constituting any board with less than three doctors, and this was the minimum number responsible for the passing of a new recruit. Sir H. Nield inquired why boards which it had been promised should consist of five medical men were reduced to three without any notification to the House. Mr. Beck replied that he must have notice of that question, but he understood that those who dealt with the matter were perfectly satisfied so long as three doctors held the examination. Sir H. Nield asked whether the attention of the Director-General of National Service had been specifically called to a circular issued by the Assistant Director of Medical Service in London reducing the board from five to three without any intimation that it was a temporary arrangement. Mr. Beck answered that attention had been called to an alleged circular which suggested reducing the medical boards to two medical men. That was objected to, and his answer dealt with that point. Mr. Hogge asked that the secret orders should be laid on the table, and whether doctors in many places had refused to accept them. Mr. Beck said that he was not aware of such refusal. The evidence he had was to the contrary, but he did not understand that there were any medical instructions of the kind. Each recruit would be examined by three doctors. Sir H. Nield asked whether recruits at the close of their medical examination at 52, Conduit Street were being requested to put their signature to a paper containing a list of names but no heading nor explanatory statement, and were told in answer to any inquiry as to the object of the request that it was an acknowledgement that they had been carefully examined, or that they had had a satisfactory examination; whether the Minister of National Service was aware that these signatures were, as a rule, asked for before the grading had been determined or communicated, and while the recruit was still unclothed; and whether instructions would be given for the practice to be discontinued. Mr. Beck replied that the information was not quite accurate. It was desired to obtain the observations of the men themselves as to whether they had any complaints to make in connexion with the examination. It was thought that this was in the interest of the recruits themselves, and would be a valuable guide to those entrusted with the arrangements and conduct of their medical examination, but as it appeared from the question that the course adopted was open to misconception, he would undertake to see that a procedure was taken which could not give rise to any such misconception.

Sanatorium Treatment in London.—In reply to Mr. Booth, Mr. Hayes Fisher, on June 5th, said that the population in the London County Council area in the middle of 1917 was slightly over four millions. The estimated expenditure of the London County Council in the treatment of tuberculosis during the last financial year was £35,000. The actual expenditure for the previous year, 1916-17, was £28,399. In addition, the Metropolitan Asylums Board incurred during that year a gross expenditure of £64,831, and a net expenditure of £33,557 on the treatment of tuberculosis. The London County Council did not erect or manage sanatoriums, but during the past year had contracted with the Metropolitan Asylums Board and with other sanatorium authorities for the provision of about 580 beds. The total number of beds provided in the institutions of the Asylums Board for the treatment of tuberculosis is about 780, apart from beds reserved for children under the care of guardians.

Plague-infected Rats.—In reply to an inquiry by Sir Shirley Benn, as to what precautions had been taken to prevent the cargo from ss. *Somali* conveying plague into England, Mr. Hayes Fisher said, on June 5th, that no disinfection of the cargo was considered necessary. To prevent the risk of plague-infected rats reaching the shore with the cargo, the ship remained moored in the river and the cargo was discharged bale by bale from the deck into lighters alongside. This proceeding accorded with the recommendation of the International Sanitary Convention (Paris, 1912) and offered the best security available. The disinfection of the vessel after the cargo was unloaded was undertaken with the main object of destroying rats in the ship. The quarters occupied by the plague cases were disinfected as soon as the men had been removed to hospital.

Bombing of Hospitals.—Replying to Mr. Joynson Hicks, Mr. Macpherson said that a recent report from the Commander-in-Chief showed that during the period from May 15th to June 1st, hospitals had been bombed on seven occasions. The casualties occurring in hospitals were not given separately from those caused in the district by the same raid. The total casualties in these seven raids were as follows:

	Killed.	Wounded.	Total.
Officers	11	18	29
Other ranks	218	534	752
Sisters	5	11	16
Queen Mary's Army Auxiliary Corps ...	8	7	15
Civilians	6	23	29
	248	593	841

In reply to a further question by Mr. Joynson-Hicks, on June 12th, Mr. Bonar Law said that he was unable to make any further statement, as the report upon the subject had not yet been received.

Payments to Auxiliary Hospitals.—In reply to Colonel Sir Frederick Hall, on June 5th, Mr. Forster said that the rates paid to hospitals for military patients were not in all cases the same, but the standard maximum rate for the great majority of auxiliary hospitals was now 3s. 3d. per occupied bed and 6d. per unoccupied bed a day. In January, 1915, the corresponding rate was 3s. per occupied bed, and there was no grant for unoccupied beds. In response to a suggestion by Sir Frederick Hall that the increase was inadequate in view of the advance in cost of food, Mr. Forster said that the new grant of 6d. per unoccupied bed represented a substantial sum.

Dental Surgeons Commissioned in the Army.—Mr. Macpherson informed Mr. Pennefather on June 10th that the number of qualified dental surgeons holding commissions in the army was 640. Of these 92 had received their commissions since March 1st, including 26 from the ranks. Inquiry would be made how many remained in the ranks.

THE late Brigade Surgeon John Law, Indian army, left £49,953 gross. After several legacies, he bequeathed the residue of his estate to King Edward's Hospital Fund for London.

A FRANCO-PERUVIAN hospital was lately formally opened in Paris in the presence of the Peruvian Committee, of which the chairman is General Benavides, a former President of the Republic of Peru, and representatives of the Association of French Ladies. The hospital, which contains eighty beds, will be maintained at the expense of the Peruvian colony.

OWING to shortage of turpentine in Germany, benzol has largely been used as a substitute in paint, varnish, etc. The result has been widespread benzol poisoning among painters working in ill-ventilated interiors of ships. The Minister for Commerce and Industries has issued stringent regulations to combat this danger. No workman may paint in an unventilated limited space for more than half an hour at a time, and he must spend at least half an hour in the open before resuming work. Several other precautions are to be taken.

THE WAR.

CASUALTIES IN THE MEDICAL SERVICES.

ROYAL NAVY.

Killed in Action.

SURGEON PROBATIONER M. D. CADMAN, R.N.V.R.

Surgeon Probationer M. D. Cadman, R.N.V.R., was reported as killed, in the casualty list published on June 10th.

ARMY.

Killed in Action.

CAPTAIN F. A. J. R. BROOKE, R.A.M.C.

Captain Frederick Arthur John Robertson Brooke, R.A.M.C., attached Wiltshire Regiment, was killed in action on May 27th. He was educated at the London Hospital, and took the diplomas of M.R.C.S. and L.R.C.P. Lond. in 1894. He took a temporary commission as lieutenant in the R.A.M.C. on July 10th, 1916, and was promoted to captain after a year's service. He had recently been serving as physician at Tidworth Military Hospital. His son, Lieutenant Cecil Rupert Brooke, Gordon Highlanders, was killed in France on April 24th, 1917.

CAPTAIN T. MOHAN, R.A.M.C.

Captain T. Mohan, R.A.M.C., was reported as killed in action, in the casualty list published on June 5th.

Died of Wounds.

CAPTAIN E. E. MEEK, C.A.M.C.

Captain E. E. Meek, Canadian Army Medical Corps, was reported as having died of wounds, in the casualty list published on June 10th.

CAPTAIN F. G. THATCHER, M.C., R.A.M.C.

Captain Francis Geoffrey Thatcher, M.C., R.A.M.C., died on June 1st of wounds received on May 30th, aged 27. He was born on September 24th, 1890, the youngest son of Mr. C. H. Thatcher, F.R.C.S.Ed., of Edinburgh, and was educated at the university in that city, where he graduated M.B. and Ch.B. in 1913. He entered the R.A.M.C. as lieutenant on July 31st, 1914, and was promoted to captain on March 30th, 1915. His Military Cross was gazetted on June 3rd, two days after his death.

Died on Service.

LIEUTENANT T. FORREST, R.A.M.C.

Lieutenant Thomas Forrest, R.A.M.C., attached Indian Army, was reported as having died on service, in the casualty list published on June 10th. He was educated at Glasgow University, where he graduated M.B. and Ch.B. in 1917, and, after acting as house-surgeon of the Western Infirmary, Glasgow, took a temporary commission as lieutenant in the R.A.M.C.

Wounded.

Lieut.-Colonel H. Moore, M.C., R.A.M.C. (temporary).
Major F. C. Chandler, R.A.M.C.(T.F.).
Major T. M. Furber, Australian A.M.C.
Major C. H. Westley, Australian A.M.C.
Captain D. C. G. Ballingall, M.C., R.A.M.C.
Captain T. H. Campbell M.C., R.A.M.C. (temporary).
Captain G. E. Charters, R.A.M.C. (temporary).
Captain J. C. Dunn, D.S.O., M.C., R.A.M.C. (temporary).
Captain F. Humphreys, R.A.M.C. (temporary).
Captain P. W. Kent, R.A.M.C.(T.F.).
Captain J. G. Lee, R.A.M.C. (temporary).
Captain E. H. Rainey, R.A.M.C. (temporary).
Captain G. P. Searle, Canadian A.M.C.
Lieutenant G. Blair, R.A.M.C. (temporary).

Missing.

Colonel A. Milne-Thomson, C.M.G., R.A.M.C.(T.F.).

Prisoners of War.

Captain A. J. Chillingworth, R.A.M.C. (temporary).
Captain A. B. Cluckie, R.A.M.C. (temporary).
Captain F. T. H. Davies, R.A.M.C. (temporary).
Captain C. E. P. Husband, R.A.M.C. (temporary).
Captain R. A. Leembruggen, R.A.M.C. (temporary).
Captain G. R. Lipp, M.C., R.A.M.C. (temporary).
Captain D. Macnair, R.A.M.C. (T.F.).
Captain C. O'Malley, M.C., R.A.M.C. (temporary).
Lieutenant W. H. Rowden, R.A.M.C. (temporary).

DEATHS OF SONS OF MEDICAL MEN.

Kennefick, John G. Hammerton, Captain Essex Regiment, son of the late Dr. Kennefick, of Clonmel, Tipperary, killed April 20th. He attained his rank on December 11th, 1914. His maternal grandfather was General Hammerton, C.B., who commanded the 44th Foot at Waterloo.

Spooner, Bernard, Royal Field Artillery, second son of Dr. Spooner of Clapton, died of wounds on May 23rd.

Stuart, Peter Dudley, Captain Royal Air Force, younger son of the late Dr. Peter Stewart. of Blundellsands, accidentally killed flying in Lincolnshire, on June 1st, aged 24. He got his first commission on September 3rd, 1914. He had gained the Croix de Guerre.

MEDICAL STUDENT.

Fraser, George D., Second Lieutenant Rifle Brigade, who recently died of wounds, aged 19, was the eldest son of Mr. Robert Fraser, registrar and inspector of poor, Inverary. He was a medical student at the University of Edinburgh, received his commission from the O.T.C. in September, 1917, and went to the front in the following month.

[We shall be indebted to relatives of those who are killed in action or die in the war for information which will enable us to make these notes as complete and accurate as possible.]

BIRTHDAY HONOURS.

ORDER OF THE BRITISH EMPIRE.

THE following are among the promotions in and appointments to the Order of the British Empire, for services rendered in connexion with the war:

To be K.B.E.

Dr. Edward Marriott Cooke, Chairman of the Board of Control.
Dr. Alexander Cruikshank Houston, Director of Water Examinations, Metropolitan Water Board.
Dr. John Lumsden, Vice-Chairman of Joint V.A.D. Committee, Ireland.
Dr. Robert Fox-Symons, Head of Auxiliary Hospitals Department, British Red Cross and Order of St. John of Jerusalem.

To be C.B.E.

Sir Hector Clare Cameron, LL.D., Red Cross Commissioner for Western District of Scotland.
Dr. Cyril Goodman, Assistant Director-General in the Department of Public Health, Egypt and the Soudan.
Dr. Thomas Morison Legge, Chief Medical Inspector of Factories.
Dr. Sarat Kumar Mullick, O.B.E., Honorary Secretary, Bengali Regiment Committee, Calcutta.
Colonel William Henry Parkes, C.M.G., Director of Medical Services, New Zealand Expeditionary Force.
Mrs. Sylvia May Payne, M.B., B.S., Commandant and Medical Officer in Charge, Torquay Auxiliary Hospital.
Mr. Charles Ryall, F.R.C.S., Assessor in Charge, London Medical Assessors for Examination of Men for Military Service.
Miss Jane Holland Turnbull, M.D., B.S., Controller of Medical Services, Queen Mary's Army Auxiliary Corps.

To be O.B.E.

Lieut.-Colonel John Kellerman Adey, Deputy Assistant Director of Medical Services, Australian Imperial Force Dépôts.
Dr. James Allan, Assistant County Director, Kent, British Red Cross Society.
Dr. Thomas Cooke Barkas, Acting Deputy Commissioner of Medical Services, Ministry of National Service, Northern Region.
Rai Bahadur Sir Kailash Chandra Bose, C.I.E., Medical Practitioner, Calcutta.
Major Ernest William Charles Bradfield, I.M.S., Officer in Charge of the Madras War Fund River Hospital ship *Sikkim*.
Fleet Surgeon Frank Bradshaw, R.N., President of a Recruiting Medical Board.
Dr. William Albert Briggs, Medical Missionary in Siam.
Lieut.-Colonel Alexander Bruce, Army Medical Department, War Office.
Dr. Edwin Albert Chill, Assistant County Director, Central Division, Middlesex, British Red Cross and Order of St. John of Jerusalem.
Dr. Alfred Cox, Secretary, Central Medical War Committee.
Lieut.-Colonel James Muir Crawford, I.M.S., Benares, United Provinces.
Miss Barbara Martin Cunningham, M.B., Ch.B., Military Hospital, Imtarfa, Malta.
Lieut.-Colonel Bertram Ramsey Dennis, for services with the British Expeditionary Force, France.
Mrs. Katharine Rosebery Drinkwater, M.B., B.S., in charge of Military Families Hospital Staff and Department, Malta.
Major William Bickerton Edwards, Commissioner for Medical Services for Ministry of National Service, Welsh Region.
Dr. William Fairbank, M.V.O., Organizer and Instructor in Ambulance Work in the Windsor District, British Red Cross and Order of St. John of Jerusalem.
Major Charles Ernest Goddard, President of a Recruiting Medical Board.
Lieut.-Colonel William Ernest Grigor, A.A.M.C.
Captain John Molyneux Hamill, for services with the British Expeditionary Force in France.
Staff Surgeon Reginald John Edward Hanson, R.N.V.R.
Dr. William Hastings, Director of Hospitals in the Department of Health, Egypt and the Soudan.
Dr. Thomas Eustace Hill, M.O.H. County of Durham.
Dr. Joseph Willoughby Hodgson, V.D., Commandant and Medical Officer in Charge, Exmouth Auxiliary Hospital, Devonshire.

Major George Home, Officer in charge of Surgical Division, No. 2 New Zealand General Hospital.
Dr. Edward William Hope, D.Sc., M.O.H. Liverpool.
Dr. Alexander Hunter, Chief Medical Officer, Earl's Court Belgian Refugees' Camp.
Major Arthur Hammersley Johnston, Assistant County Director, British Red Cross Society, East Riding of Yorkshire.
Dr. William Dunmore Loveday, designer of the Wantage crutch.
Dr. William Halliburton McMullen, Specialist Member of a Recruiting Board.
Major William Lewis Martin, Deputy Commissioner of Medical Services, Ministry of National Service, Perthshire.
Lieut.-Colonel Frank Hamilton Mewburn, C.A.M.C.
Major Henry Ross, Additional Assistant Director-General I.M.S., Bengal.
Major Thomas Lindsay Sandes, M.B.E., Officer in Charge of the Surgical Division, South African Hospital, Richmond.
Major Hugh Short, N.Z.M.C.
Dr. Robert James Smith, Chairman Cardiff Local War Pensions Committee.
Captain Hugh Stott, I.M.S., Medical Officer on board the hospital ship *Madras*.
Dr. Charles R. J. Atkin Swan, Administrative Medical Officer, Royal Air Force Hospitals.
Miss May Thorne, M.D., in charge of Sisters, hospital, and staff departments, Malta.
Mr. Charles Todd, Principal Bacteriologist of the Department of Public Health, Egypt and the Soudan.
Dr Frederick Thomas Travers, Commandant and Medical Officer, Maidstone Auxiliary Hospital, Maidstone, Kent.
Major Alexander Lewis Urquhart, R.A.M.C., for services with the British Expeditionary Force, Salonica.
Captain Thomas George Wakeling, President of a Recruiting Medical Board.
Captain John Wallace, Deputy Commissioner of Medical Services, Ministry of National Service.
Fleet Surgeon Alfred Ernest Weightman, R.N., Medical Department, Admiralty.
Fleet Surgeon Samuel Henry Woods, R.N.

To be M.B.E.

Temporary Lieutenant Henry John Andrews, I.M.S., medical officer in charge of the Thomas Emery Hospital at Moradabad, United Provinces.
Dr. William Edward Audland, Assistant County Director, Northamptonshire, British Red Cross and Order of St. John of Jerusalem.
M. R. Ry Tiruvadi Chidambara Ramaswami Sarma Avargal, Sub-assistant Surgeon, Madras.
Ali Ibrahim Bey, Senior Assistant Surgeon at Kasr-el-Ainy Hospital, Cairo.
Wadih Bey Birbari, P.M.O., Nagazig Hospital.
Lieutenant George Thomas Brown, C.A.M.C.
Dr John Harold Burridge, Commandant and Medical Officer in Charge, Slough Auxiliary Hospital.
Surat Kunwar Chaudhuri, M.B., Benares State Service.
Dr. Harry Gordon Cooper, Assistant County Director for Altrincham Division, British Red Cross and Order of St. John.
Mrs. Barbara Grace Rutherford Crawford, M.B., Ch.B., Medical Officer at one of H.M. factories, Ministry of Munitions.
Dr. John Edwards Cresswell, P.M.O., Suez.
Miss Lucy Davis Cripps, M.B., Ch.B., Medical Officer at a national filling factory.
Mrs. Mary Ariel Stewart Deacon, M.B., B.S., Medical Officer at a filling factory, Ministry of Munitions.
Dr. Archibald Alexander George Dickey, Organizer, Colne Auxiliary Hospital, East Lancashire.
Captain Wilberforce Vaughan Eaves, Medical Officer, Royal Arsenal, Woolwich.
Dr. Duncan Forbes, M.O.H. Brighton.
Captain William Harris Fox, C.A.M.C.
Miss Catherine Fraser, M.B., Ch.B., Medical Officer at one of H.M. factories, Ministry of Munitions.
Dr. William John Gilpin, Commandant, Bourne Auxiliary Hospital, South Lincolnshire.
Dr. Arthur Stanley Green, Commandant and Medical Officer, Boutham Auxiliary Hospital, North Lincolnshire.
Maurice Roberts Wilson Hart, I.S.M.D., Assistant Surgeon, Madras.
Miss Eileen Mabel Hewitt, M.D., Medical Officer in Charge, Women's Hospital, Royal Arsenal, Woolwich.
Dr. Thomas William Hicks, Staff Medical Officer to County Director and Officer in Charge of Red Cross Convoys, Middlesex, British Red Cross and Order of St. John of Jerusalem; Commandant, East Finchley Auxiliary Hospital.
Dr. Edwin Andrew Cuthbert Hindmarsh, Officiating Civil Surgeon, Muzaffarpur, Bihar and Orissa.
Khan Sahib Sayad Nazir Hussain, I.S.M.D., Civil Surgeon, Mianwali, Punjab.
Captain Robert Kirkpatrick, C.A.M.C.
Dr. James MacLachlan, Honorary Secretary Sutherland Branch, Scottish Branch, British Red Cross Society.
Miss Florence Muriel Morris, M.D., Commandant and Medical Officer in Charge, Paignton Auxiliary Hospital, Devonshire.
Dr. Albert Alfred Osborne, Commandant and Medical Officer in Charge, Ilfracombe Auxiliary Hospital, Devonshire.
Dr. Leslie Powne, Commandant and Medical Officer in Charge, Crediton Auxiliary Hospital, Devonshire.
Lieutenant John Ritchie, Second in Command of Army Medical Store, Woolwich.
Miss Mary Thompson Ritchings, M.B., Ch.B., Medical Officer in Charge, Y.M.C.A., Auxiliary Hospital, Swansea.
Captain James Maxwell Ross, F.R.C.S.Ed., County Director, Dumfries, Scottish Branch, British Red Cross Society.
Mr. Albert Charles Butler-Smythe, F.R.C.S.Ed., member of a Recruiting Medical Board.
Mrs. Emma Christine Williams, M.B., B.S., Medical Officer at a Shell Filling Factory.

*Mr. Frederic G. Hallett, secretary, Committee of Reference, is appointed an officer of the Order, and Lieut.-Colonel Orland K. Gibson, Deputy Director of Dental Services, Canadian Forces, Mr. Edmond T. Gann, civil assistant to the Director-General A.M.S., and Miss A. L. Lawrence, assistant secretary, Central Medical War Committee, are appointed members.

The following members of the medical profession are among the recipients of the medal of the Order of the British Empire for services in connexion with the war in which great courage or self-sacrifice has been displayed: Dr. Ernest James Berkley and Dr. Athol Raymond Moore, for rescue work on the occasion of a Zeppelin raid, and Dr. Edward Wright (Divisional Surgeon Metropolitan Police) for attending to the injured on the occasion of an air raid.

MENTIONED IN DISPATCHES.

THE following are among the names of those brought to notice in a dispatch, dated March 25th, by Lieut.-General G. F. Milne, K.C.B., D.S.O., Commander-in-Chief, British Salonica Force, for gallant and distinguished services rendered from September 21st, 1917, to February 28th, 1918:

Staff.

Colonel G. T. Rawnsley, C.B., C.M.G., A.M.S.
Lieut.-Colonel P. H. Henderson, D.S.O., R.A.M.C.

Royal Army Medical Corps.

Lieut.-Colonel M. M. Lowsley.
Temporary Lieut.-Colonel C. M. Wenyon, C.M.G.
Major (acting Lieut.-Colonel) F. J. Garland.
Major R. K. White.
Temporary Major H. W. Wiltshire.
Captain and Brevet Major (acting Lieut.-Colonel) B. Johnson.
Captain (acting Major) A. L. Urquhart.
Captains E. Davies and A. M. McCutcheon.
Temporary Captains: D. I. Anderson, G. V. Bakewell, D. M. Borland, R. C. Brown, P. C. Davie, T. E. George, L. G. McCune, J. H. McNicol, M.C., F. H. Morrell (Special List), E. C. White, A. Wilkin.
Temporary Lieutenant E. Gardner.

Royal Army Medical Corps (Special Reserve).

Captains: T. Y. Barkley, M. C. Cooper, G. G. Drummond, J. A. Musgrave, H. B. Sherlock, M.C., H. W. Torrance.

Royal Army Medical Corps (Territorial Force).

Lieut.-Colonel J. R. Whait.
Major and Brevet Lieut.-Colonel F. E. A. Webb.
Captain (temporary Lieut.-Colonel) H. G. G. Mackenzie.
Captain (temporary Major) A. W. Falconer, D.S.O.
Captains: C. E. C. Ferrey, L. A. Harwood, W. H. Manson, S. E. Potter, P. S. Price, G. White, H. W. Weir.
Quartermaster and honorary Captain G. W. Harris.

Indian Medical Service.

Temporary Lieutenant H. S. Rajan.

NOTES.

Fleet Surgeon William Wallace Keir, R.N., is among the officers mentioned in dispatches (*London Gazette*, June 7th).

L'ENTENTE MÉDICALE.

For a considerable time past, owing to the fact that French and British troops have been fighting in the same areas, French wounded have reached British casualty clearing stations and British wounded have reached the corresponding French units (hôpitaux d'évacuation). *Le Journal* has called attention to the fact that recently this has happened on a much larger scale, owing, no doubt, to the unification of the chief command and the consequent more intimate mingling of French and British troops. The intention is that a French soldier treated at a British clearing station or a British soldier treated at a French evacuation hospital should be sent on from there to the hospital on the lines of communication provided by his own country, but this has not always been possible, and many French wounded have, we believe, reached British hospitals on the lines of communication and even at the base. Our contemporary states that the converse recently happened on a somewhat large scale. After a recent offensive the large evacuation hospital under the control of the military Government of Paris received a large number of British wounded. The first arrivals were admitted to the hospitals at St. Cloud, Astoria, and the Bois de Boulogne, and the overflow were sent on to the French Red Cross hospitals, where our allies were thoughtful enough to send nurses who could speak English well. As soon as they were fit to be moved on the men were sent by hospital trains to ports of evacuation. On June 8th General Phillips, commandant of the British zone in Paris, formally thanked M. Louis Mourier, Under Secretary of State, for the great care and skill expended on the British wounded. M. Mourier immediately transmitted the thanks of the British general to the medical inspector of the district, General Février, and to his fellow workers, medical and nursing.

Scotland.

VENEREAL CLINIC IN EDINBURGH.

A BRANCH of the National Council for Combating Venereal Disease was formed at a public meeting called by the Lord Provost on June 5th. The scheme for a venereal clinic in Edinburgh, which Dr. Leslie Mackenzie said would shortly receive the sanction of the Local Government Board, covers not only Edinburgh but the three Lothians. Provision is made for a special department at the Royal Infirmary, to be open at convenient hours, and also for indoor treatment. Provision is also made for expert advice for medical men and institutions, and it is intended to establish pathological laboratories for diagnosis. The meeting was attended by Sir Francis Champneys and Mrs. Gotto (representing the

National Council). The latter spoke of the necessity of protecting the ignorant from the devices of quacks, the enactment against whom was not being enforced. The motion for the appointment of the local committee was made by Councillor Young, convener of Edinburgh Public Health Committee, seconded by Dr. McKenzie Johnston, President of the Royal College of Surgeons, and supported by Sir Robert Philip and Professor Russell, President of the Royal College of Physicians.

Treatment of Disabled Soldiers.

At the monthly meeting of the Joint Institutional Committee of Scotland, held in Edinburgh on June 8th, the chairman, Sir Arthur Boscawen, M.P., Parliamentary Secretary to the Ministry of Pensions, announced that Major Grant had presented his house and grounds at Kilgaston, Perthshire, to be used as an institution for permanently disabled men. It will be available for patients from all parts of Scotland, and will be managed by a committee appointed by the Central Area Committee. The orthopaedic annexe at Tynecastle, Edinburgh, will, it is expected, be ready in July. A scheme for providing after-sanatorium treatment for discharged men suffering from tuberculosis at the Polton Farm Colony was approved by the meeting, which also received a report from the South-Western Committee on the necessity for providing a hospital to give in-patient treatment to discharged men from the West of Scotland. A scheme was also considered for an annexe at the Moffat institution for pensioners for discharged men suffering from rheumatism.

Working of Insurance.

Speaking at the first of a series of lectures arranged by the Scottish Insurance Commission, to be given in different centres, Sir James Leishman, chairman of the commission, said that in spite of the war the financial experience of last year had been satisfactory. Payments into the Scottish fund amounted in round numbers to 12 millions; payment out for sickness, disablement, and maternity benefit was very nearly 4 millions, and 3 millions had been paid out for medical benefit, sanatorium benefit, and the working of insurance committees and societies. Nearly 5 millions was invested. There were substantial balances to the credit of almost all the societies in Scotland, and there was no reason for the loose statements that the Insurance Act and the societies were bankrupt.

Ireland.

Meeting of Medical Delegates.

At a largely attended meeting of delegates of the Irish medical profession held in the Royal College of Surgeons, Dublin, on May 29th, 1918, the following resolutions were passed:

Reappointment of Irish Medical Committee.

(*a*) That the Irish Medical Committee be reappointed; that it be constituted as arranged at the delegates' meeting July 13th, 1913, and that it be empowered, if it think desirable, to give adequate representation on its body to any medical association or organization for which provision was not made at the aforesaid delegates' meeting.

(*b*) That for the purpose of recording the views of the medical profession in Ireland in connexion with Irish medical affairs, and, when necessary, promoting legislation thereupon, the Irish Medical Committee, owing to its representative character and constitution, be regarded the authoritative body with regard to such matters.

Salaries of Poor Law Medical Officers.

(i) That this meeting of delegates, representing the medical profession in Ireland, is of opinion that the initial salary for dispensary districts should be £200 per annum, increasing to a maximum of £300 per annum after fifteen years' service; that in the case of existing officers these terms should have retrospective application, and that a special scheme of salaries be drawn up by the Irish Medical Committee for medical officers of workhouses.

(ii) That the Irish Medical Committee, acting in conjunction with the local medical committees, take such action that pressure can be brought to bear from the central committee to supplement the demands for increased scales of salaries put forward by counties or union areas; that in the event of boards of guardians refusing to grant adequate salaries, that the medical officers in the areas concerned communicate with the secretaries of the Irish Medical Committee before taking further action.

Medical Benefits under Insurance Act.

That we approve of the extension of medical benefits to Ireland on terms suitable and acceptable to the profession in this country.

Deputation to Local Government Board.

The meeting arranged that a deputation should be appointed by the Irish Medical Committee to wait on the Local Government Board, and that it should make strong representation to this Board to take the necessary steps:

(1) To fix or regulate the salaries of all Poor Law medical officers. (2) To introduce a bill in Parliament providing compulsory superannuation for Poor Law medical officers, and to urge, if possible, a provision for an increase in the superannuation of retired Poor Law medical officers. (3) To make alterations in the present system of sworn inquiries so as to protect the medical officers from frivolous and malignant accusations and their undue publicity. (4) To make changes in the rules for the presentation of tickets for medical relief.

Pledge.

The delegates having all signed the following pledge the meeting directed that secretaries of local medical committees take steps to have it signed by all the doctors residing in the areas covered by their committees:

That in case it should be necessary for any doctor to resign his appointment for the betterment of his position, I promise not to apply for or to accept his appointment, or to act as locumtenent in his district as long as it is vacant.

England and Wales.

Maternity Nursing in London.

A conference on maternity nursing, arranged by the Central Council for District Nursing in London, was held on June 4th under the presidency of Sir William Collins, M.P., with whom was Sir Arthur Downes. The points for discussion were—

1. To what extent is it desirable and practicable that maternity nursing should be undertaken by district nursing associations in London?
2. The relation of maternity nursing to midwifery, and, in particular, whether it is essential that the maternity nurse should hold the C.M.B. certificate.
3. The question of co-operation with the hospitals for the purpose of nursing the extern maternity cases.

As these three subjects were taken together the discussion was somewhat disjointed, and all resolutions were ruled out, as it was not desired to tie the council's hands, but merely to elicit a free expression of opinion. With regard to the first point, Sir Arthur Newsholme, after detailing what the Local Government Board had done, said that the Board had no intention to supersede the work of the voluntary associations. The second point was the one which gave rise to most discussion. Sir Francis Champneys expressed the view that it was absolutely essential, if any scheme was to be successful, that the private practising midwife should be retained. He was convinced that poor women would not consider that any official, however competent, stood in the place of the women of their choice. In doctors' cases his view was that the nurses should not be midwives. With regard to the third point, Dr. Lauriston Shaw expressed the opinion that the hospitals would welcome any effort on the part of nursing associations to help their extern maternity departments. Some had provided nursing sisters in sickness, but not maternity nursing to any large extent. A large number of other speakers took part in the discussion, including medical men and women, practising midwives, and members of district nursing associations; and in summing up the various expressions of opinion Sir William Collins said that the interchange of views had been valuable. The ideal in all minds was to secure that no parturient woman should be unattended or inadequately or improperly attended. On the first of the specific points before the conference he had heard no negative opinion expressed, and the third point also as to co-operation with the hospitals had brought out no disagreement. It was really with regard to the second question that divergence of view was to be noted. The midwife had a great past, and would perhaps have a great future, but the fully qualified nurse was not disposed at the present time to work under a midwife who had had six months' training. Could the midwife be trained so as to become the equivalent of the obstetrician, and could a

midwife be expected to supply all the maternity nursing that her own case required? He gathered that Sir Francis Champneys's opinion was that this was hardly possible. A record would be kept of all the remarks and suggestions made at the conference, and a full report would be made to the Central Council, who would give it most careful consideration.

Correspondence.

PRECAUTIONS AGAINST THE SPREAD OF MALARIA.

SIR,—Your leading article (May 25th, p. 595) on the precautions which should be taken against the possible spread of malaria in this country is timely. The anopheles mosquito is always with us, and, if infected, as it may be, by the return of malaria-stricken soldiers, we may be faced by a problem of great magnitude.

Fortunately we can never suffer as in Cromwell's day, for Ronald Ross—*parvaque pars fui*—has laid the foundations on which we should build. But the lesson has been imperfectly learnt and the traditions of forty years ago die hard. Constantly, in my consulting-room, I hear the old heresies stated, and even many medical men still adhere to the massive doses of quinine which are traditional in the tropics. Captain Yeates's letter, therefore, is a valuable contribution to the sum of our information. I agree with him most emphatically as to the evils wrought to the digestive organs by the administration of excessive doses of quinine. Many a man may be free from fever so long as his digestive functions hold out, but succumbs after an initial attack of gastritis induced by quinine and followed by anaemia and cachexia. In tropical countries the liver is prone to congestion, and one would naturally ask why its disabilities should be further increased by excessive dosage with quinine. Surely it would be more reasonable to give calomel in appropriate doses and to limit the doses of quinine to the lowest possible amount compatible with efficiency.

The effective dose of quinine varies with the individual, the environment, and the degree of exposure. But in Macedonia (1916), where a malignant malaria is prevalent, I never found it necessary to resort to the heroic doses I still find advocated by some physicians. The War Office recommend 60 grains a week—roughly 10 grains a day—this in my experience is not only excessive but positively harmful.

The malarial parasite is susceptible to quinine only in its earliest stages of development. The more mature forms are entirely uninfluenced. To drench, therefore, a man with quinine in the hope of perchance catching the parasite in its earliest stages is unscientific. If quinine upsets the digestion, congests the liver and reduces the natural resistance of the patient, then quinine, improperly given, may be an evil rather than a benefit.

I have found in West Africa, India, Burma, Malay States, Japan, and in Macedonia under war conditions, that 5 grains once a week is an adequate prophylactic dose. But if one is so unfortunate as to be exceptionally exposed then an extra dose of 5 grains is probably advisable as an additional precaution.

In cases of malaria the most favourable time to give quinine is, if it can be detected, the moment when the temperature is about to rise, for then the parasites are in their youngest and most susceptible stage; at this time only can quinine be of value. If this moment is missed, as it easily may be, no quinine should be given until the pyrexia has reached its height and is about to fall. The patient meanwhile may be immensely comforted by small doses of phenacetin. Quinine given with a rising temperature only tends to increase headache and malaise.

The salt of quinine employed is not a matter of indifference. The sulphate is less soluble and more irritating than the hydrochloride and much less easily absorbed. For years I have used only the hydrochloride. In one striking case from Mexico I found the hydrochloride entirely successful after months of treatment by the sulphate had proved ineffectual.

All who had experience in Macedonia would testify that many lives were saved by hypodermic injections of quinine when all other methods of administration had failed.—I am, etc.,

R. FIELDING-OULD, M.D., M.R.C.P.

London, S.W., June 3rd.

PROTEIN "SHOCK" THERAPY.

SIR,—The leading article in the JOURNAL (June 1st) is timely, and invites a few observations. The article conveys the impression that the reaction or shock is exclusively produced by the injection of protein, whereas it is also capable of production by non-protein substances. This indicates that the reaction is not due directly to the substance introduced. For this and other reasons I suggested the term "pyrogenic therapy" in a paper on this subject published in the JOURNAL of February 16th, 1918 (which, so far as I know, is the only one hitherto published in this country). Therapeutically considered, there is no benefit without the rise of temperature. As to your view that much more investigation is needed, this is very true in the general sense, but I would submit that the scientific basis of the treatment is quite as well established as that of any other treatment, and a good deal better than some. It consists in the desensitization or immunization of the patient at a single stroke.

There is no conflict between the new treatment and the practice of specific artificial immunization. Their modes of action differ in a manner now fairly well understood, but that is too wide a subject to discuss here. Long ago Wooldridge demonstrated that tissue fibrinogen could confer an immunity against anthrax which was quite as effective as that obtained by bacterial inoculation. There is a certain class of cases, not amenable to specific immunization by small graded doses, which are rapidly cured by the new treatment, irrespective of the organism or organisms present. As you state, the clinical results are "surprising," and difficulties in regard to the correct understanding of the process should not deter medical men from conferring these benefits on their patients. Indeed, so far as I can gather, ours is about the only country in which the treatment is being neglected. It certainly demands care and skill on the part of the doctor, but what treatment worth anything does not?—I am, etc.,

London, W., June 7th. A. G. AULD.

ADAPTATION AND DISEASE.

SIR,—In reference to the controversy between Professor Cunningham and Professor Adami on priority in the view that the mechanism of heredity is rather chemical than particulate (BRITISH MEDICAL JOURNAL, pp. 632, 658), I ask permission to quote the following passage:

> Concerning the *modus operandi* we know nothing; the phenomena may be due, as Hering suggests, to molecular vibrations, which must be at least as distinct from ordinary physical disturbances as Röntgen's rays are from ordinary light; *or it may be correlated, as we ourselves are inclined to think*, with complex chemical changes in an intricate but orderly succession.—*Natural Science*, 1898.

The essay in which this occurs is reprinted as it stands (save for correction of press errors) in my *Problems of Life and Reproduction*, 1913, with an added footnote:

> This view is essentially the same as that developed by Delage in his *Théorie des Causes Actuelles* (l'Hérédité, p. 7) and by J. T. Cunningham in his *Hormone Theory of Heredity*.

I confess to a feeling of disappointment that my position next to others should not have been recognized in your columns.—I am, etc.,

Cork, June 11th. MARCUS HARTOG.

VINCENT'S ANGINA.

SIR,—In the JOURNAL of February 2nd, 1918, page 160, in a letter on Vincent's angina, Major Bowman, C.A.M.C., asks you to publish "finally when and where the first observations on this disease were made as occurring amongst British troops." From the context it would appear that Major Bowman is under the impression that Vincent's angina was first observed in British troops during the present war. The disease was frequently observed amongst the troops, especially young soldiers, at Woolwich, from the autumn of 1907 to the spring of 1912, about four and a half years, during which time I was clinical pathologist at the Royal Herbert Hospital.—I am, etc.,

J. COWAN,
Lieut.-Colonel R.A.M.C.

Station Hospital, Jubbulpore, C.P., April 10th.

Obituary.

THE RIGHT HON. ROBERT FARQUHARSON, P.C., M.D., LL.D.,

Formerly M.P. for West Aberdeenshire.

WITH deep regret we announce the death of Dr. Robert Farquharson, which occurred at Finzean House, Aboyne, Aberdeenshire, on June 8th. He was born at Edinburgh on June 21st, 1836. His father, Dr. Francis Farquharson, the second of a generation of doctors, is described as a man of good physique and of exceptional ability. He gained a considerable reputation as an ophthalmic surgeon, and was on the staff of the Eye Dispensary, where he had among his pupils Sir Charles Tupper, afterwards Prime Minister of Canada. His wife, Alison Mary Ainslie, daughter of an intimate friend of Robert Burns, was a celebrated beauty in her day. Robert received his literary education at the Edinburgh Academy, and entered the University of Edinburgh as a medical student in 1854. He had among his teachers John Goodsir, Hughes Bennett, Simpson, Syme, whose dresser he was, Christison, Gairdner, Warburton Begbie, and Matthews Duncan. After taking the L.R.C.S. he graduated M.D. in 1858, the subject of his thesis being the parasitic diseases of the skin, with special reference to treatment by epilation. He entered the Army Medical Service, and was first attached to the Royal Artillery, from which in 1859 he was transferred to the Coldstream Guards. After nine years' service with that distinguished regiment he was appointed medical officer to Rugby School, of which Dr. Temple was then the head. When Temple became Bishop of Exeter in 1869, Farquharson, "not caring much for the new régime," determined to seek his fortune in London. Before settling down he visited the medical schools and hospitals of Berlin and Vienna, and shortly after his return became assistant physician to St. Mary's Hospital and lecturer on materia medica at the medical school. In 1875 he succeeded Dr. Cheadle as physician to the skin department, and two years later became physician to out-patients. He was elected F.R.C.P. in 1877.

Francis Farquharson on becoming Laird of Finzean in Aberdeenshire threw up medicine. The estate covers 16,900 acres and includes Lumphanan, where, according to tradition, Macbeth was slain. When Robert Farquharson became laird on his father's death in 1878 he, too, abandoned the profession and retired from St. Mary's Hospital. He was elected M.P. for West Aberdeenshire as a Liberal in 1880, retaining his seat till 1906. He did very useful work in the House, where, as he modestly says, he eventually gained a kind of position as an authority on matters medical and scientific. Whenever he rose to speak on such subjects he was invariably called. He always spoke on the Army Estimates and was instrumental in securing substantive rank for medical officers. He strongly advocated the better feeding of recruits. When after the Boer war Mr. Burdett-Coutts attacked the Army Medical Department the Government did not see fit to defend the doctors and asked Farquharson to move the adjournment. He was fully prepared for the fray, but to his deep disgust his motion was blocked. The lunacy laws gave him the opportunity for an annual speech in which he never lost an opportunity of contrasting the Scottish arrangements with the English, to the disadvantage of the latter. He took an active part in the promotion of cremation, and once produced for the edification of the House a small bottle containing the ashes of a cow to show that this method of disposing of the dead is a clean and even artistic process. Farquharson served on a number of important Committees—on the Contagious Diseases Act, the Midwives Bill, the Shop Hours Regulation Act, the ventilation of the House, and other sanitary and medical questions. For six years he was Chairman of the Private Bills Committee, which gave him a kind of official status. But what he considered the crowning honour of his parliamentary career was his unanimous election as chairman of the Scottish Liberal party, a position which he held till his retirement.

When Farquharson retired from Parliament after a quarter of a century's service he found consolation in a distinction which he highly valued—the Privy Councillorship bestowed on him in 1906. The high regard in which he was held by his political associates is well expressed in a letter written by Sir Henry Campbell-Bannermann to Mr. Eugene Wason:

> The little troop of honest Scots will not seem itself in future without "The Doctor." His genial temperament, his courteous and kindly demeanour, his cheerful spirit, his keen interest in all public affairs, which was guided by a good share of natural common sense—these good qualities attracted the affection of us all. We are infinitely sorry to lose him from among us.

Robert Farquharson was a staunch but moderate Liberal, always earnest in the promotion of what he believed to be sound reforms, but cherishing no illusions as to the advent of the millennium through the action of politicians. He made no pretence to oratory, but could say what he meant in telling, if homely, speech. He was very successful as a speaker at by-elections. He was a picturesque figure, whether in the sombre raiment of civilized life in the House, or in the kilt as the chieftain on his ancestral heath. His walrus-like moustache made him a tempting subject for the caricaturists, but there was no touch of malice in their handling. He was popular with every section of the House, and at Finzean he entertained many persons of distinction in various spheres of achievement. He was not much of a sportsman, but could take his place in a shooting party without disgrace.

Farquharson took a great interest in the work and prosperity of the British Medical Association, and was a frequent attendant at its annual meetings. In his early days in London he was joint secretary with Dr. Patrick Stewart of the Metropolitan Counties Branch, and secretary of the Section of Medicine at the annual meeting held at Sheffield in 1876. He was afterwards president of the Aberdeen Branch in 1898–1899, and vice-president in 1900 and 1901. He was appointed chairman of the Parliamentary Bills Committee on the death of Mr. Ernest Hart in 1898, and continued to hold that office till 1900, when he declined nomination for re-election. He frequently introduced deputations from the Committee to the Government in connexion with public health and medico-political matters.

Dr. Farquharson had considerable skill as a connoisseur. In his youth he had some notion of taking up art as a profession, but the genius of his brother, Mr. Joseph Farquharson, R.A., as he confesses, overshadowed him. For many years he contributed an article on the pictures in the Royal Academy, and his knowledge of art combined with his trained medical eye made him an effective critic. We also had the privilege of publishing many letters from his pen on subjects of current interest, written in a vigorous and happy style. He was the author of several contributions to *Blackwood's Magazine*, including a plea for Scottish landlords (1904) and the case of the moderate drinker. He solaced the tedium of his closing years by the production of two volumes of reminiscences, *In and Out of Parliament*, published in 1911, and *The House of Commons from Within, and other Memories*, which appeared the following year. Though somewhat carelessly written, these books give an interesting sketch of a varied life and many portraits of the men of mark with whom he was brought into contact.

Dr. Farquharson was unmarried. He was a J.P. and Deputy Lieutenant for the county of Aberdeen. In 1883 the honorary degree of LL.D. was conferred on him by the University of Aberdeen.

DR. ARCHIBALD S. DICK, of 1, Bellahouston Terrace, Ibrox, Glasgow, died in his 47th year in a nursing home, on May 26th, from acute pneumonia. He was a graduate of Glasgow University, taking the degrees of M.B., C.M., with "high commendation," in 1894, and M.D. in 1899. After graduation he spent several years as resident physician in hospitals in London, Dublin, and Glasgow. Dr. Dick was a most popular figure at college, in the hospital, and with his many patients. At the annual gathering of his college year the want of his genial humour and his kindly voice will be an irreparable loss. His personality endeared him to all who came in contact with him, but those who knew him best will miss him most. He led a strenuous life, ungrudgingly attending to the numerous calls of his large practice. Not possessing an over-robust constitution his early death may be placed to the stress of these days. The earth has lost one of its grains of salt, but those who were privileged to look into his heroic

soul know well that he would not look upon his death as a disaster but as a well-earned promotion. The sympathy of many mourners goes out to his widow.

THE LATE DR. HEBB.

SIR BRYAN DONKIN writes: May I add a few words from my personal knowledge to the memorial article in your issue of May 25th on the occasion of the death of my great friend and sometime colleague, Dr. R. Grainger Hebb? I most cordially agree with your statement that

> No member of the staff of the Westminster Hospital in the last thirty years exercised so great an influence over the students or was so universally esteemed for the precision of his knowledge, for his entire freedom from professional cant, and for his essential probity of character; to none did old students return in after years with more affectionate and grateful remembrances.

These telling words are indeed a splendid tribute to his memory, true to the letter, and a eulogy that but few can deserve. But I am anxious to emphasize the fact that, whether or no his systematic lectures on medicine or his clinical teaching beyond the mere elements of medicine were more or less unattractive to some students, Dr. Hebb never lost touch of the principle that clinical study and pathology should be regarded as inseparable. If, indeed, his long association with the pathological department and his extensive acquaintance with all-round pathology, so widely known to the profession in London, may have overshadowed his reputation as a clinical observer and an exceptionally thoughtful and able physician, I am sure that he may be ranked with the very best of those comparatively few physicians who have persistently obeyed this principle. Hebb was in this particular fully worthy to be classed with such men as Wilks, H. Gawen Sutton, of the London Hospital, and James Andrew of Bartholomew's. In my opinion his clinical intuition was unsurpassed by anyone's in my time. He was as good at the bedside as in the *post-mortem* room.

Nor do I think that Hebb lacked the scientific imagination. Rather he held it in check, partly from his great reluctance to write on any subject prematurely, and partly because he ever realized the frequent errors made by some who, having formed plausible and attractive hypotheses, proceeded all too soon to regard them, and induce others to regard them, as fully verified theories. His retiring disposition, and his long-standing illness, may have deprived him of the title "a great physician" in the usual sense of these words, but a great physician he certainly was.

IN the brief obituary notice of the late Colonel James Forbes Beattie, R.A.M.C.(ret.), p. 633, it should have been stated that he was promoted Brevet Colonel for valuable services rendered in connexion with the war, with effect from June 3rd, 1917.

The Services.

INDIAN MEDICAL SERVICE.

THE *London Gazette* of June 11th announces the following alteration in the rank and titles of surgeon-generals of the Indian Medical Service: Surgeon-generals ranking as lieutenant-generals shall be granted the rank and title of lieutenant-general, and surgeon-generals ranking as major-generals shall be granted the rank and title of major-general.

Universities and Colleges.

UNIVERSITY OF CAMBRIDGE.

AT a congregation held on June 7th the following were admitted to medical degrees by proxy:

B.C.—W. N. Leak, A. W. Stott.

UNIVERSITY OF LONDON.

THE degree of D.Sc. in Statistics has been conferred upon Robert John Ewart, an internal student of the Lister Institute of Preventive Medicine, for a thesis on the influence of age of parent at birth on length of life, sex, susceptibility to zymotic diseases, stature, intelligence, and eye colour.

Dr. Janet E. Lane-Claypon has been appointed examiner in hygiene on the Board of Examiners for the academic diploma in sociology.

The Senate has expressed its gratification that the London Hospital has decided to open its medical college to women students.

The following were appointed staff examiners for medical degrees for 1918–19:—

Anatomy: Professors R. W. Reid and A. Macphail. Bacteriology: Professor R. T. Hewlett. Chemistry: P. Haas and Professor J. M. Thomson. Forensic Medicine and Hygiene: F. J. Smith and Professor Matthew Hay. General Biology: J. Stuart Thomson and J. T. Cunningham. Medicine: Professor Arthur J. Hall and Sir James Galloway, K.B.E., C.B. (Internal). Mental Diseases and Psychology: Robert H. Cole and W. H. B. Stoddart. Obstetric Medicine: G. F. Blacker and Comyns Berkeley. Pathology: Professor J. Martin Beattie and Charles Bolton, F.R.S. Pharmacology: Professor H. J. Campbell and Fred Ransom. Physics: W. Makower and F. Lloyd Hopwood. Physiology: Professor D. Noel Paton, F.R.S., and Professor E. H. Starling, C.M.G., F.R.S. State Medicine: Richard King Brown and W. G. Savage. Surgery: William Turner (Internal) and V. Warren Low, C.B. Tropical Medicine: C. W. Daniels.

The annual report of the Superintendent of the Brown Institution for 1917 states that 2,550 animals had been brought to the institution; they included 1,060 dogs, 840 cats, and 470 horses. Five lectures on dysentery and allied conditions were delivered by Mr. F. W. Twort, the superintendent.

LONDON INTER-COLLEGIATE SCHOLARSHIPS BOARD.

FOURTEEN medical entrance scholarships and exhibitions, of an aggregate total value of about £1,200, tenable in the Faculty of Medical Sciences of University College and King's College, and in the Medical Schools of Westminster Hospital, King's College Hospital, University College Hospital, and the London (Royal Free Hospital) School of Medicine for Women, will be offered for competition on Tuesday, July 16th, 1918. Full particulars and entry forms may be obtained from the Secretary of the Board, Mr. S. C. Ranner, M.A., Medical School, King's College Hospital, Denmark Hill, S.E.5.

SOCIETY OF APOTHECARIES OF LONDON.

THE following candidates have been approved in the subjects indicated:

SURGERY.—*G. H. FitzGerald, *†L. E. Lewis, *H. M. Waller.
MEDICINE.—*J. Gorsky, *†F. Lyth, *†H. Lyth, *†G. G. Rigby, *†J. Stephen, *†T. C. Stephen.
FORENSIC MEDICINE.—J. Gorsky, T. Mensa Annan, J. Stephen.
MIDWIFERY.—A. M. Berman, A. G. Curzon Miller, S. V. Goldhurst, T. Mensa Annan, H. H. Selim.

* Section I. † Section II.

Medical News.

DR. E. H. TWEEDY (principal medical officer) has been appointed a member of the executive committee of the colony of Sierra Leone.

OWING to the present position of supplies, it has become necessary to reduce the jam ration in the civil general hospitals scale from 8 oz. to 4 oz.

MR. HENRY EDGAR WILLIAM HOFFMEISTER, M.A., M.B., B.C.Cantab., M.V.O., of East Cowes, has by deed poll changed his name to Edgar William Seymour.

MR. WALTER SCHRÖDER, Coroner for Central London, and Dr. F. J. Waldo, Coroner for the City of London and Southwark (a past president), have been elected president and honorary secretary respectively of the Coroners' Society.

AT the last meeting of the Society of Public Analysts Mr. A. Chaston Chapman reported that he had worked out a method for the manufacture of plant nucleic acid on a large scale, and that considerable quantities of the acid and its salts are now being manufactured in this country.

THE annual meeting of the British Science Guild will be held at the Mansion House, London, under the chairmanship of the Lord Mayor on Wednesday next, June 19th, at 4 p.m., when an address on education, science, and leadership will be given by Lord Sydenham. Cards of invitation can be obtained from the Secretary of the Guild, 199, Piccadilly, W.1.

A MASS meeting will take place on Monday, July 1st, at 3 p.m.; a national conference on maternal and infant welfare will be held on July 2nd and July 3rd, and an educational mothercraft exhibition will be open throughout Baby Week, July 1st to 6th, at the Central Hall, Westminster. The address of the Baby Week Council is 27A, Cavendish Square, London, W.1.

THE late Sir George Hare Philipson, whose gross estate has been sworn at £36,235, has by his will bequeathed £2,000 to the University of Durham College of Medicine, Newcastle-on-Tyne, for the foundation of two Philipson scholarships to be awarded to the undergraduate of the college obtaining the highest marks at the M.B. final examination.

MISS FRANCES IVENS, M.B., M.S.Lond., Médecin-Chef of the Scottish Women's Hospital at Royaumont, Villers Cotterets, successfully evacuated the hospital last week in the midst of severe enemy fire and several successive air

raids. Miss Ivens carried on till the last permissible moment, operating under these trying conditions; no one among staff or patients was injured. Miss Ivens has been in charge of Royaumont since the hospital was opened in November, 1914, and received the Legion of Honour in 1917.

THE third annual meeting of the National Council for Combating Venereal Diseases will be held at Caxton Hall, Westminster, on Monday next at 5.30 p.m., when the chair will be taken by the president, Lord Sydenham. A discussion will take place on the place of legislation in the campaign against venereal diseases. Among those who are expected to take part in it are Mr. Hayes Fisher, M.P., Mrs. A. C. Gotto, and Mr. E. B. Turner.

LIEUT.-GENERAL SIR ARTHUR SLOGGETT was entertained on June 10th by some members of the British Red Cross Society and the Order of St. John on the occasion of his relinquishing the post of Chief Commissioner of the joint societies at the expiration of his term of office as Director-General of Medical Services with the British armies in France. Among those present were the Earl of Donoughmore, the Earl of Lucan, Viscount Knutsford, Viscount Chilston, and Lord Cheylesmore. The Duke of Connaught was prevented from being present owing to his absence at Aldershot on military duties.

Letters, Notes, and Answers.

ORIGINAL ARTICLES and LETTERS *forwarded for publication are understood to be offered to the* BRITISH MEDICAL JOURNAL *alone unless the contrary be stated.*

CORRESPONDENTS who wish notice to be taken of their communications should authenticate them with their names—of course not necessarily for publication.

Authors desiring reprints of their articles published in the BRITISH MEDICAL JOURNAL are requested to communicate with the Office, 429, Strand, W.C.2, on receipt of proof.

The postal address of the BRITISH MEDICAL ASSOCIATION and BRITISH MEDICAL JOURNAL is 429, Strand, London, W.C.2. The telegraphic addresses are:

1. EDITOR of the BRITISH MEDICAL JOURNAL, *Aitiology, Westrand, London*; telephone, 2631, Gerrard.
2. FINANCIAL SECRETARY AND BUSINESS MANAGER (Advertisements, etc.), *Articulate, Westrand, London*; telephone, 2630, Gerrard.
3. MEDICAL SECRETARY, *Mediocra, Westrand, London*; telephone, 2634, Gerrard. The address of the Irish Office of the British Medical Association is 16, South Frederick Street, Dublin.

The address of the Central Medical War Committee for England and Wales is 429, Strand, London, W.C.2; that of the Reference Committee of the Royal Colleges in London is the Examination Hall, 8, Queen Square, Bloomsbury, W.C.1; and that of the Scottish Medical Service Emergency Committee is Royal College of Physicians, Edinburgh.

QUERIES AND ANSWERS.

INCOME TAX.

X. inquires as to his liability to pay tax on professional debts recovered since his retirement, and as to expenses incurred while acting in an "outdoor locumtenency."

*** The debts in question are not assessable to income tax; X. having paid tax on his assessed profits as a general practitioner is entitled to regard these sums as postponed receipts of profits taxed in previous years. On the other hand, he is liable to pay tax on his receipts as a locumtenent without any deduction for private expenses, notwithstanding that he is maintaining his former residence as well as paying for rooms, etc., where his work is now being done. A locumtenent on "indoor" terms is in a favourable position in that he receives (in effect) unassessable emoluments or benefits.

SALIVARY CALCULI.

G. P. desires advice as to treatment of a man aged 55, obese, and the subject of gout, who has salivary calculi. Several have been removed already from Wharton's duct, but after a period of days or weeks fresh ones make their appearance and cause considerable pain and irritation.

LETTERS NOTES, ETC.

WRITING with regard to the difficulty of separating the parts of an all-glass hypodermic syringe which have become stuck, Dr. G. G. Davidson states that after leaving such a syringe, in which both the nozzle and piston were stuck, in strong nitric acid for three and a half months they came apart quite easily.

MR. W. J. GOODING (61, Burlington Road, New Malden) has patented a bedstead lift trolley to enable bedsteads without castor wheels to be transferred from one place to another. The trolley is wheeled beneath the bedstead, which by means of a lever is lifted a few inches clear of the ground.

THE TREATMENT OF PERNICIOUS ANAEMIA.

DR. THORNE THORNE'S note in the JOURNAL of June 8th, p. 645, has led a correspondent, "Locum," to send the following note: Nearly three years ago I took over a practice of a young friend who was joining the R.A.M.C., and one of the cases was a man with pernicious anaemia, as diagnosed by a professor of medicine. As the man was exceedingly ill and did not look as though he could last long, I gave him several doses of salvarsan cream (made by Allen and Hanbury) in the buttock, and he began to improve thereafter. The injections gave him considerable pain, and he refused to have as many as I had wished to give him; but he is alive and well to-day and going about superintending his work. He had been taking iron and arsenic before that, and I did not stop them, but a marked change came over him at that time. He is still taking the drugs at intervals, but possibly they may be unnecessary. I was afraid to stop them as he was doing so well.

ELECTRO-CHEMICAL TREATMENT OF GONORRHOEA.

CAPTAIN H. H. KING, I.M.S., writes with reference to the electro-chemical treatment of gonorrhoea to make the following suggestions:

1. That the same electrical treatment might possibly be of the greatest service in the treatment of ordinary infected gunshot wounds, helping the removal of bacteria and pus from the surface of infected tissues. I am not aware of this method having been tried.

2. That in the simple irrigation of all mucous membranes hypertonic salines should be more used, with or without the addition of compatible antiseptics such as potassium permanganate. I have used such with a little permanganate as large enemata in the treatment of dysentery. Knowles and Cole (*Ind. Journal of Med. Research*, January, 1917) have found enemata of 1 in 80 magnesium sulphate useful in amoebic dysentery. I see no reason why the ordinary weak permanganate solution used for the urethra should not be a hypertonic one.

3. For the irrigation and distension of the urethra a metal catheter might be used with a projection at the handle end for the entrance of the irrigating liquid, and with several small perforations in three rows along ½ in. of its length starting from ½ in. below the ordinary hole at the bladder end. The whole catheter should be traversed by another finer tube opening at the two ends of the catheter only, thus shutting off the bladder from the main channel of the catheter. Liquid would enter by the side nozzle, flow along the main channel, enter the urethra in its prostatic part through the small perforations, course along the urethra, and so out. The inner channel would drain the bladder of all leakage into it. Distension would be secured at will by squeezing the urethra. The catheter would be passed slowly, and stopped as soon as urine flowed from the inner tube.

I have no experience with such an instrument; the idea suggested itself on reading Captain Lumb's note (BRITISH MEDICAL JOURNAL, October 6th, 1917).

THE BELGIAN DOCTORS' AND PHARMACISTS' RELIEF FUND.

Subscriptions to the Second Appeal.

The following subscriptions and donations to the Fund have been received during the week ending June 8th:

	£ s. d.		£ s. d.
Dr. T. Rouse	1 1 0	*Anonymous	1 1 0
*Mr. J. H. Jacobs... ...	10 10 0	Mr. E. Spencer Evans (*m.*)	0 10 0
Dr. H. J. Mackenzie ...	1 1 0	Dr. Albert Lucas	2 2 0
Drs. Forsyth and Norman	1 1 0	Dr. Alfred Cox (*m.*) ...	1 1 0
Sir A. Pearce Gould (*m.*)	5 0 0	*Lady Cooper	10 0 0
Dr. W. A. Milne	3 0 0	*Mr. G. S. Albright ...	50 0 0

* Per Sir Rickman Godlee. *m.*, Monthly.

Subscriptions to the Fund should be sent to the Treasurer, Dr. H. A. Des Vœux, at 14, Buckingham Gate, London, S.W.1, and should be made payable to the Belgian Doctors' and Pharmacists' Relief Fund, crossed Lloyds Bank, Limited.

THE appointments of certifying factory surgeons in the following places are vacant: Cruden (Aberdeen), Dublin (Dublin), Mullingar (Westmeath).

SCALE OF CHARGES FOR ADVERTISEMENTS IN THE BRITISH MEDICAL JOURNAL.

	£ s. d.
Seven lines and under	0 6 0
Each additional line	0 0 9
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Whole page	12 0 0

An average line contains six words.

All remittances by Post Office Orders must be made payable to the British Medical Association at the General Post Office, London. No responsibility will be accepted for any such remittance not so safeguarded.

Advertisements should be delivered, addressed to the Manager, 429, Strand, London, not later than the first post on Wednesday morning preceding publication, and, if not paid for at the time, should be accompanied by a reference.

NOTE.—It is against the rules of the Post Office to receive *poste restante* letters addressed either in initials or numbers.